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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE NEW EXPORT TAX ON CEYLON RUBBER.**

THEORETICALLY, the English mind is strongly addicted to the doctrine of free trade—the import and export of material and merchandise without barrier or burden. But theories bend to conditions, and as the times are very much out of joint the Colonial authorities of Ceylon decided early in October to place an export tax of ten shillings per 100 pounds, or 2½ cents a pound, on all rubber leaving their ports. This action came as a distinct surprise to the rubber importing trade of the United States and its immediate effect was an advance in price of plantation rubber, followed by a lesser increase in the price of Brazilian sorts.

One cause assigned for this new levy was labor difficulties on the plantations arising from the recent riots in some of the Eastern cities; but probably the underlying reason was the financial pinch felt in British administrative circles, both at home and in the

colonies, in unison with all the other belligerents. This urgent need of revenue is likely to be a chronic condition among the warring nations, at least for some time to come, and as a consequence imposts that are placed on commerce now may be looked upon as there to stay for a considerable length of time.

But the most interesting question is, who will have to pay this extra 2½ cents per pound? The customer? If so, the importers, manufacturers or consumers, or all three combined, of the United States will have to bear at least one-half the burden. The rubber exports from Ceylon for the first eight months of the present year, omitting re-exports of rubber produced elsewhere, amounted to over 25,000,000 pounds. Nearly 40 per cent. of this was shipped direct to New York. Undoubtedly another 15 per cent., which went to London, later found its way to American ports. It will be safe to estimate the total exports for the year at 40,000,000 pounds, over 50 per cent. of it coming, first or last, to the United States. So that if the customer pays the tax, our contribution for the year would amount to over half a million.

But in the present condition of the market, with the abundant supply of rubber, the customer is not likely to bear very much of this burden. In fact, he appears already to have shifted it back upon the producer. For though the price of plantation rubber advanced 1½ cents a pound on the announcement of the tax, in less than three weeks' time this entire advance had disappeared and Ceylon rubber was being offered at the same figures as before the imposition of the tax.

There is no assurance, however, that the consumer may not feel the effect of this tax later. The exigencies of the war will call for more and more revenues, and it is quite within the possibilities that this initial tax of 2½ cents per pound may be materially added to, as necessity arises, and that other Eastern ports may also get the habit. It is quite conceivable under present conditions, and with no prospect of immediate peace, that Eastern rubber might ultimately be called upon to pay export duties equal to those of South America, for instance, where Manaos levies 18 per cent. and Para over 22 per cent. In that event, the producer could hardly be expected to bear the burden alone. His offerings would certainly decrease, prices would advance, and the consumer would either have to shoulder some share of the burden or else be content with decidedly smaller supplies. Of these two alternatives he would undoubtedly accept the former.

WILL THERE BE A "DUMPING" OF RUBBER GOODS?

MANY reports have come from Washington of late to the effect that our statesmen, now scattered abroad over the country but soon to re-convene at the national capitol, are considering the possible effects upon the American market of the cessation of hostilities across the waters. A considerable number take the attitude that Europe will be in such dire straits, and it will be so necessary for her to rehabilitate herself industrially that she will be willing to forego all profits and all luxuries, and even the comforts of life, in order to reopen her factories and find purchasers for their products. As a consequence, they fear a great dumping of cheap European goods on the American market.

Others take an opposite view and maintain that when the war is over Europeans will be so exhausted in men, morale and material that they will be totally unable to compete with the healthy economic conditions which obtain in this country, and that American manufacturers will have nothing to fear from European products.

Probably both of these extremes are wrong. Undoubtedly the truth lies in some middle ground. There is no question that Europe will be in a very sad state industrially and that she will bend every energy towards re-entrance into her former markets; but that these efforts will be sufficient to flood the United States with extremely low-priced products seems hardly probable. It is likely, however, that in a short time after the conclusion of hostilities, American imports of European goods will equal, if they do not surpass their volume prior to the outbreak of the war.

How will this situation affect the rubber trade? In footwear and mechanical goods probably very little. In the tire trade and in hard rubber, druggists' sundries, clothing, sporting goods and toys the effect is likely to be more noticeable. For instance, after the enactment of the Underwood tariff, which reduced the duties on tires from 35 to 10 per cent., there was a noticeable increase in the imports of this article. During the first seven months of 1913 manufactured rubber imports into the United States equaled in value \$720,544. During the first seven months of the following year, after the new tariff had gone into force, these imports increased nearly 50 per cent., and, undoubtedly, had it not been for the war, imports of tires and the other kinds of rubber goods mentioned above would have continued to show a substantial growth in volume.

Accordingly, in view of the situation immediately antedating the European outbreak, it seems altogether reasonable to anticipate that when peace is restored there will be an increase in imports of rubber goods, which, while not necessarily alarming, will at least be worthy of attention on the part of American manufacturers.

THE GROWING RANKS OF RUBBER IMPORTERS.

IT was not so many years ago that a man with the normal number of digits could count the American importers of crude rubber on the fingers of one hand—with possibly some slight assistance from the other hand. Of brokers, pure and simple, there were still fewer. But all that has been changed. A fairly careful listing of the companies, firms and individuals now engaged in the pursuit of importing crude rubber into the United States shows their number to be 115, while of brokers there are 23; making a substantial total of 138. This growth in the number of the importers' ranks is certainly a noteworthy feature of the general development of the industry.

To be sure, the manufacture of rubber goods in the United States is vastly greater now than it was a few years ago and the importation of crude material naturally is much larger. By way of comparison, 20 years ago the entire value of the annual production of rubber goods in this country did not exceed \$75,000,000, and the annual consumption of crude rubber was not over 18,000 tons. The year 1915 will unquestionably witness a production of rubber goods exceeding \$400,000,000 in value, or over five times its value of two decades ago; while crude rubber imports will be close to 60,000 tons if they do not exceed that figure. But even so, with all this great general growth, the increase in the number of importers and brokers has been proportionately much more rapid and presents an interesting phenomenon.

AN OVERSEAS TRUST TO INSURE NEUTRALITY.

THE American Overseas Corporation, which bids fair to be in operation within a very few days, seems on the surface to be an excellent idea—so excellent, in fact, that it is surprising that it has not been suggested before; as it is a simple arrangement for avoiding the delay and irritation of the constant surveillance of American cargoes by the belligerent powers.

Briefly, the plan is to form an organization of large exporting and financial interests to guarantee that American exports shipped to neutral countries are in reality designed for neutral consumption. While the United States Government will not be officially responsible for the conduct of the enterprise it has, through Secretary Redfield, given its approval of the project and agreed to render it substantial assistance.

It is stated that the British Government is ready to give recognition and approval to this new movement. This is quite logical, as it would relieve the British authorities of a great deal of irksome police duty. Instead of being obliged to keep constant oversight over a large number of exporters, great and small, it will be able to deal with one responsible organization whose standing will place its good faith beyond question. While to American commerce it means a welcome relief from irritating interference, with not infrequently costly delays.

The Story of Gutta Percha—IV.

SOURCES—CONTINUED.

IN the whole world there is no other article about which there is so much of lying, thieving and fraud as crude gutta percha. Cheating each other, cheating the ultimate consumer, is the chief vocation, the production of real gutta percha being quite incidental. As it arrives it is worthless for manufacture, and it is only after a prolonged series of cleansings that the free gifts of the simple forest people have been eliminated and the gum rendered fit for use.

The gatherer does not consider that he is cheating when he puts stones into the product he sells to the dealer, who cheats him in price and weight. It is only a trade custom. The Chinaman also has his trade customs and an amazing knowledge of the chemistry, physics and economics of adulteration and cheating. As the supply grows less, the mixture of water, dirt and inferior gums grows larger. There is a

great variety of sorts of gutta percha in the eastern markets, all known by Chinese or native names and differing from each other chiefly in the manner of their adulterations. Dr. Sherman took a specimen of the pure gum to a Chinese dealer and asked him what kind it was. The latter said that it was a new kind to him and that he guessed no Chinaman had made it—which was a good

guess. These traders pay the native gatherers of the more remote districts about three cents a pound for their product, giving in payment "traders' goods" of quite as honest quality as the gutta percha which comes from their adulteration studios. The problem of their regulation or suppression is one which imperatively confronts all the governments having lands with gutta percha forests.

EXPLORING FOR GUTTA.

The first supplies of gutta percha naturally came from the Malay Peninsula, but with the increasing demand, Sumatra, just across the strait, soon began sending its gum. Further and further away the traders reached. In a few years all the great trees in readily accessible districts had been hacked down and supplies were coming from far afield. As the young trees grew to maturity, they fell under the axe and, for all practical purposes, the gutta percha tree ceased to exist in the localities where it was earlier known. From further and further away the supplies came, for, as the gatherers were forced to go further into the interior, the natives

of the outer periphery were roused to begin the destruction of the trees of their own forests. So the stream steadily flowed into and from the shipping ports and fatuity declared that this was sure proof that the forests were inexhaustible and the supply would always keep pace with the demand. Borneo was soon drawn upon—the last of the great reservoirs was tapped. But in the early eighties the insistence of men who declared that destruction without renewal could not forever go on aroused the French, British and Dutch governments to try to learn something about this mysterious reservoir of gutta percha, from which for forty years the world's supply had been ceaselessly drawn.

France was first in the field in the person of M. Seligmann-Lui, who, in 1881, was sent by his government to explore the gutta percha country for trees and then look for more of the same kind in the neighboring French possession of Cambodia

and French Cochinchina. This expedition proved that gutta percha trees cannot be had by wishing for them, and French Indo-China had to continue without native gutta percha forests. But M. Seligmann-Lui gained much valuable information about the habitat and characteristics of the gutta percha-producing trees.

The expedition of Mr. Leonard Wray, Jr., who thor-

oughly explored the Malay Peninsula, not only placed important botanical material in the possession of the establishment at Kew and in the Indies, but contained illuminating information as to the wasteful manner in which the collection was made and the amount of gum left to decay in the fallen tree.

The last of the historic expeditions was perhaps the most important of all—that of Dr. W. Burck, of the Dutch Colonial Service, who, at the time he started, late in 1883, did not know of the expeditions of M. Seligmann-Lui and Mr. Wray. He was a thorough botanist and his painstaking studies were embodied in a monograph on the *Sapotaceae* of the East Indies. He pointed out that the genus known as *Dichopsis*, having been separated from *Isonandra*, was identical with the genus described, as *Palaquium* by Father Blanco in his "Flora of the Philippines." His researches and conclusions have come to be regarded as the final word as to the botanical characteristics and distribution of the gutta percha trees.

In 1912, Herr Rudolph Schlechter, of the German colonial com-



STARTING A GUTTA PERCHA PLANTATION, BUKIT TIMAH, SINGAPORE.

mittee, exploring the north coast of Kaiser Wilhelm Land—the German section of New Guinea—spent several days in travel through dense swamps, toward the Bismarck mountains. Near the Goldfields station they found gutta percha of good quality. They felled some large trees which Herr Schlechter identified as a species of *Palauquium*, the product being equal to, if not identical with, the product known to the Malays as "getah taban merak," and belonging to the best type of gutta percha. The material found had the same reddish tinge as that seen in Perak.

At the time of the American occupation of the Philippines, and for several years later, all works on gutta percha made the specific statement that no gutta percha-producing trees had been found in those islands. Yet, for twenty years, at least, exportations had been going on. The trade had almost stopped, however, because the gum had been so debased by the Chinese adulterators that the usually none-too-particular post dealers had revolted, and would have no more of it. Immediately after the Americans assumed control, the gathering and export were resumed. In 1900 the government learned that the wild natives of Mindanao were engaged in cutting down the gutta percha trees at a rate which meant their speedy extermination. To get at the real facts they dispatched Dr. Pennoyer Sherman, Jr., who made a thorough exploration of the islands, reporting on the botanical and economic aspects of the matter. He found gutta percha-producing trees in large areas of Mindanao and a few in other localities, including some small tracts in Luzon. There were nine species of *Palauquium*, but none of *Palauquium gutta* or its sub-species. It was, indeed,

in the "Flora of the Philippines" that *Palauquium* was first named. The valuable *Payena Lerii* was also found, and furnishes a considerable part of the exports.

AT LAST, MODERN METHODS.

Although these expeditions did not

result in the discovery of new and untapped "inexhaustible" forests of gutta percha trees, they gave much-needed light on the methods necessary for the finding of future supplies of the indispensable gum. It was realized that there was a distinct anomaly in gaining a necessity for the greatest triumph of modern civilization by methods which it

were base flattery to describe as paleolithic. Nature had spent fifty years in building up a beautiful tree, which has the mysterious power of making the much-prized gutta percha. A naked savage cuts it down and leaves it to rot, draining out a pound of gutta percha, and leaving forty times as much to go to waste. He mixes a little dirt and water with the gum, sells it for a few cents to a dealer, who adds his own sophistications, and passes it along on its way to civilization. And for this destructive work the people who are most interested in preventing it pay ever higher and higher premiums!

There are evidently three

ways in which to meet the problem of conserving the supply. One is the protection of the remaining forest trees; another is better means of collecting, and a third, the cultivation of the plant. All three methods have been undertaken by the Dutch authorities of the East Indies, and probably in time to avert a real disaster in the failure of the supply. The first is the one which most naturally occurs to the student of the problem, but



GUTTA PERCHA NURSERY.



GUTTA PERCHA PLANTATION HEADQUARTERS, JAVA.

it is hedged about with great difficulties. The native of the back districts knows only the law of the jungle, which is not the same as that of the colonial office. Those who know how bitterly the pot-hunting classes of civilized lands resent the enactment and enforcement of necessary game laws, may have some faint idea of what the native of the forest, a hundred miles from the nearest white station, thinks of a law which says that he shall not cut down the tree which no white man ever has seen or ever will see. The tree is there, the Chinese dealer is convenient, and he needs the money. Forest laws are highly desirable, but only the

most impossible optimist will see in them any effective correction of existing conditions. Laws forbidding export will do something, but where there are thousands of miles of coast line, with innumerable coves sheltering the craft of a race of born sailors, it will be seen that this plan also presents difficulties.

In the matter of collection it is obvious that the industry of deliberate adulteration with either dirt or inferior gums is not one to be encouraged. The one sure way to suppress an undesirable commodity is to destroy its market; and it is a question whether the time has not arrived when importing countries should not take steps to

abate the adulteration nuisance. If all gutta percha arriving at the ports of the consuming countries were subject to analysis and refused admittance, when too outrageously sophisticated, the dealers in dirt would begin to learn their trade over again. It cannot be left to individual buyers to reject the debased commodity. Competition will always defeat any plan of that kind. If undertaken by the governments, every effort should be made

to prevent any country from trying to gain an advantage in trade by offering an open market to the outlawed adulterations refused by other ports.

The economist must weep when he sees a great tree cut down

for a handful of gutta percha, and weep again when he sees three per cent. taken away and ninety-seven per cent. left to decay. The first consideration is whether the gum may not be secured by tapping, leaving an uninjured tree to produce further supplies. The answer is that it can be so obtained, but not by the irresponsible wild gatherer. The native does not know how to tap the trees, and does not

want to know. It is far easier and much less dangerous to fell the tree, and the yield is greater than that gained by tapping. If he undertook tapping with the tools he carries, he would kill the tree and get practically nothing for his pains.

Reform in this direction, while highly desirable, does not seem to promise much in regard to the remaining forest supplies. As in most if not all latex-producing plants, the characteristic product of the gutta percha trees is found in the leaves, as well as in the bark. As a matter of fact there is, weight for weight, about twice as much gutta percha in the leaves as in the bark, but obtaining it is not so simple a



CULTIVATED GUTTA PERCHA TREES (4½ YEARS OLD) AT PANJINDANGAN.



CULTIVATED GUTTA PERCHA TREES AT TJIPETIR (*PALAEQUIM OBLONGIFOLIUM*; AGE 22½ YEARS.

matter. If a dried leaf of *Palaquium* be broken and the pieces carefully pulled apart, little white threads of gutta percha can be seen, and if a green leaf be broken, tiny beads of latex will appear like those on a dandelion or lettuce leaf. Early experiments, though carried on with a great deal of perseverance, failed to extract the gutta percha in satisfactory form, and a heap of gutta percha leaves was as a matter of practical

value very much like a clay bank containing thousands of dollars' worth of aluminum, which it would cost tens of thousands to extract. Physical and chemical processes both were tried with varying success, the chief chemical processes being the dissolving out with various petroleum products or with toluene, or with other resinous distillates. By this means gutta percha of a high degree of commercial purity and low resin-content was obtained, but there were strong disputes as to its availability for cable purposes. It was maintained by some chemists that, notwithstanding the low resin-content, these resins were more detrimental than the larger proportion found in the ordinary commercial gutta percha. In the leaf gutta percha the resin is chiefly alban, and it was claimed that a more nearly equal mixture of alban and fluavil, even in larger proportion to the amount of gutta, improved the dielectric and tensile properties. The earlier leaf gutta percha was also distinctly colored with chlorophyll, and "green gutta" was put down in the market as of distinctly inferior grade.

The mechanical production involves the comparatively simple process—on paper—of grinding and boiling the leaves. As a matter of fact, it was only after prolonged study and effort that the mechanical details were perfected and commercial success attained. This, however, has been done, and a large part of the future supply of gutta percha will certainly be of leaf origin. It is not likely, however, that leaf production will ever figure largely in the case of wild forest trees. To carry the necessary machinery to the forests, or to carry the leaves to the settlements, would not be an easily economical process.

It is, then, to the cultivated *Palaquium* groves that we must look, and that involves a good look ahead, for the "taban merak" is a slow-growing tree, and if "the man who plants pears, plants for his heirs," the same is even more true of gutta percha. But we, who are the heirs of all the ages, have reason to be glad that others before us have looked out for us, and, while most of us are selfish and short-sighted, there are in every generation a few who are wise beyond their time. One of these was J. E. Teysmann, who, in 1856, procured the planting of some trees of "taban merak" at the residency gardens at Buitenzorg, of which he was curator from 1830 to 1869. From the few trees then planted will come a far greater part of the world's future supply than from all the countless millions then standing in the "inexhaustible forests," which short-sighted persons were engaged in exploiting. These furnished the stock of the gardens planted at Tjipetir, in Java. From these gardens will come the stock of most of the future gutta percha plantations of the East Indies—that is to say, of the world.

The plantations are on the south coast of Java, and are situated at an elevation of 1,700 feet. The first planting was made under the supervision of Dr. Burck. There are now about 2,500 acres under planting. At the beginning the trees are planted four feet apart each way. After three years they have grown so that thinning must be resorted to, and the leaves and

young twigs are utilized for the production of gutta percha. From this time on, the proportion of gutta percha obtained grows greater, and from a mature plantation it is believed that there can be had about one hundred pounds to the acre. Of this, about three-fourths would be from the leaves, while one-fourth would be obtained by tapping by the herring-bone method. If the leaf-gutta lacks in any degree the qualities of that obtained by tapping, it is at least superior to most of that which comes to the market, while for purity and evenness of standard, that obtained by tapping on plantations is, of course, unequalled.

At prices paid in recent years for the best qualities a yield of at least \$150 an acre for a long series of years is one which could easily be anticipated.

Wireless telegraphy is invaluable in providing communication with ships at sea, and it is highly useful in supplementing cable communication. But, so far as the demand for gutta percha is concerned, it is likely to make for its increase rather than otherwise. For the wireless, being much less capable of monopolization than cable communication, tends to set a limit to the price which can be charged for messages. On the other hand, for long distances, the cable can be operated more cheaply. The wireless keeps down the rate. The cable company bids for business at lower rates. Lower rates mean more messages; greater facilities; more cables, more gutta percha.

Gutta percha species of various sorts have been planted here and there through the Malay peninsula. Experiments conducted by the forest department in 1913-14 consisted in cutting off some sixty gutta trees at a height of about 15 feet and plucking from 50 to 100 per cent. of their leaves. These trees had put out new shoots and grown

new leaves five months after their mutilation and their appearance was quite healthy, proving that the growing gutta tree can be relieved each year of all its leaves without fatal injury.

In tapping experiments one thousand and thirty trees having a minimum girth of 18 inches produced a total of 409 pounds of clean gutta, or an average of 6.35 ounces per tree. In no case were the trees excessively damaged, most of them being only slightly tapped. Some trees measuring from 30 to 42 inches in girth produced as high as 11 ounces each, while 17 trees exceeding 42 inches in girth produced 1½ pounds.

The French Government also has planted with *Palaquium gutta*, *Payena Lerii*, and other gutta trees in Algeria, Madagascar, Martinique, Guadeloupe and French Guiana. The growth of these trees is exceedingly slow, and it is generally felt that private planters should not be expected to tie up their capital for so long a time, but that governments should do the planting.

The area that can be profitably planted with *Palaquium gutta* remains to be seen. Besides countries to which the tree is native there are—Java, where success has already been attained; probably the Celebes, the Philippines, the Moluccas and New Guinea; also Ceylon and the southern part of British India. Not improbably, also, certain localities in the corresponding latitudes of Africa and South America.

(To be continued.)



A CHINESE MORO TRADING BOAT AT MINDANAO FOR GUTTA PERCHA.

Rubber in the Service of Life Saving.

MOST of us have heard so much about the ordinary cork-filled life-preserver that we have generally come to look upon this material as the best thing for the service. This is a mistake. There is no denying the virtues of this buoyant bark, but it has its drawbacks. A cork-packed life-belt is bulky, and because of this fact a number of them require a good deal of space. Therefore, in most instances, we find these protective articles stored away in more or less inaccessible places. To get them out of the way they are put just where panic-stricken passengers will find it hardest to get them when the moment of peril arrives. Because of these circumstances, inventive cunning has been busy for years in seeking other forms of life-preservers, turning to different materials to solve the problem of compactness and buoyancy, together with greater accessibility in time of need.

It is an interesting fact that the first and also the last work in which Charles Goodyear interested himself had to do with life-preservers. In the winter of 1834, after an unfortunate career in the hardware business, Goodyear, who was then a young man a trifle over 30 years of age, visited New York on a business errand and happened to pass the New York store of the Roxbury Rubber Co. He had read quite a little about the wonderful success of the new rubber industry which had recently sprung into existence, and he went into the store to examine some of the rubber products manufactured by that company. His attention was attracted to a life-preserver. He examined it carefully and, with his quickness of perception he discovered that it was susceptible of considerable improvement. He went home and thought the matter over, and his ingenious mind soon suggested how the apparatus could be improved. He returned to the store hoping to sell his idea to the company.

The agent in charge of the New York business of the company was struck at once with Goodyear's ingenuity and hoped, as he had been able to make one valuable suggestion, that he might make another of infinitely greater value, so he took him into his confidence at once, and told him that they did not care to buy his improvement on the life-preserver, for the simple fact that the whole rubber business was on the verge of collapse, as the company had made up a great quantity of goods during the cool months of the preceding year and had distributed them quite widely, only to discover when the warm weather of summer came on that all these rubber goods—shoes, coats, life-preservers and all the rest—had a fatal tendency to melt. If Goodyear could discover some remedy for this difficulty, the storekeeper told him that his fortune would be made.

Thirty years later, after Goodyear's wonderful achievements, and after the great honors that the English and French governments had bestowed upon him, he was in London when he encountered the statement in some publication that twenty human beings were drowned every hour of the day. It made a deep impression on him, and he immediately fell into one of those moods of abstraction to which he was given when he was trying to solve some new rubber problem. He brooded on the matter so much that he was unable to sleep, and his wife, fearing the results of the continued strain, asked him to get his mind on some other subject and try to sleep.

"Sleep," he replied; "how can I sleep while twenty human beings are drowning every hour, and I am the man who can save them?"

It was Goodyear's hope to invent something that would effectually stop this great loss of human life by drowning. He sought to discover some way of converting into a life-preserver some customary article of apparel, like the hat, or coat; and he even sought to devise some sort of necktie that could be inflated and thus keep a person afloat. He thought that every detachable article on shipboard—every table, every chair and stool—ought to be so constructed as to serve as a life-preserver. Though he died before carrying this work to a thoroughly successful completion, many of his ideas were later embodied in sundry life-preserving devices.

About forty-five years ago, a few years after

Goodyear's death, an inventor constructed an all-india-rubber suit, which should not only serve to keep the wearer afloat but should provide sustenance for some time. For this purpose it had a receptacle sufficient to store a little supply of drinking water and another receptacle to hold food enough for several days.

Furthermore, the suit was so contrived that the wearer could fix himself upright in the water or recline on one side or the other, or on his back. With each suit was a paddle. The price was moderate. The practicability of the suit and its good wearing qualities under long and hard usage were demonstrated by the late Paul Boyton before the naval boards of all nations and under rigorously conducted tests made to interest the principal foreign and domestic steamship companies.

In an endurance test in Russia, Boyton, in his india-rubber suit with the receptacles for food and drinking water, remained forty-eight hours in the water, when the atmosphere as recorded by a Fahrenheit thermometer was 20 to 30 degrees below zero. The tests were carried out under the direction of Admiral Popoff and staff, and were highly successful. In the following winter,



CAPTAIN BOYTON ENJOYING AN OCEAN SAIL AND A CIGAR.

four men garbed in the Boyton pattern of life-saving suits made the round trip between Calais and Dover in cold and stormy weather with comfort.

We can verify many kindred performances by reference to the periodicals of the later "seventies." One of the amusement features for big excursion boats at that time was to go seaward, put Boyton overboard, and, after he had paddled about for a while to watch him prepare a hot meal for himself on the rolling waters.

The United States, the French and the British navies recommended the purchase of a few Boyton suits, but this encouragement was not enough to save the enterprise from disaster, and the investors lost the half million which they put in the project. It has been said that the main factor against the sale of the invention was the conservatism of ship owners, who considered the old life-preserver of cork and canvas quite good enough. This is hardly correct. It was not conservatism but economy that constituted the prime obstacle to adoption. A cork life-belt cost comparatively but a trifle, and where the crews were numerous and the passenger lists big, this phase of the matter made the supplying of Boyton suits impracticable. Indeed, the exigencies of "business" rather than the need of improved safeguards for travelers upon the water have generally prevailed, unless legislative enactments have forced changes.

It is a matter of common knowledge that life-boats have been carried for years without being put in the water, and cork life-belts have become virtually useless through dry rot in the course of years of non-use. Ship owners, therefore, have widely grown to look upon these protective facilities much in the light of wasteful expenditures—capital that they could have used to their own profit in other directions. Every conference dealing with safety upon the sea has met with no end of opposition whenever it undertook to declare certain things to be needful for the better security of travelers and crews. It is apparent, then, that the inventor must labor in the direction of economy and for the attainment of efficiency plus compactness. This explains the reason for so many of the life-belts and life-vests and -jackets that have come into being of late years.



LIFE-PRESERVING DEVICE OF FIFTEEN YEARS AGO.
Consisting of Coil of Rubber Tubing with Mouthpiece.

Rubber has seemed the ideal material for most of these latter-day inventions, its elasticity permitting an article of small compass to be filled with air to provide the desired measure of buoyancy, while combining both water- and air-tightness. Some of our illustrations clearly indicate the general trend of these devices. In one case, we have a man inflating the annular folds of a rubber belt, and a modification of this idea is found in a double-walled waistcoat—the compartments being readily inflated by the wearer. Naturally, the man seeking protection in this fashion would wear the article of dress described whenever he ventured upon the water, and certainly there would be reassurance in knowing that it would not be necessary to rush for a cork life-



ONE OF THE EARLY LIFE-PRESERVING VESTS.

belt in the moment of danger and possibly not be able to reach it in time.

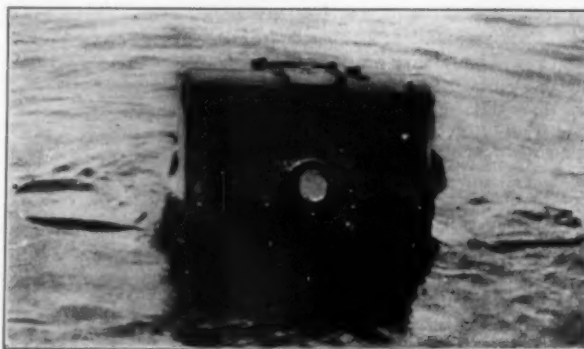
For a good many years the United States Life Saving Service, now merged in the United States Coast Guard, tested all sorts of life-saving apparatus of reasonable promise, and many of these have been and are extremely ingenious. One of them reported upon in 1890 showed plainly the pioneer influence of Boyton. This suit was of two parts—head cover and a one-piece garment for the entire body—not unlike a modified diving dress. The hood covered the head completely and had wire-gauze panels in the face for the admission of light and air and to enable the wearer to look out. The body portion was gathered in around the neck by a drawing-string, and the hood secured outside of this band. The suit was composed of rubber cloth, and for additional buoyancy there were rubber floats arranged on a belt to be fastened about the waist. About the same time an inflatable rubber belt, capable of being filled by means of an air bulb, was offered to the service for trial. The buoyant tubes were made of rubber.

The Bunsen life-saving and swimming apparatus was submitted for test in 1900. The life-preserver consisted of three rubber sacks encased in saten covers. The sacks were designed to be strapped about the body and to be inflated through small rubber tubes, which closed automatically by spring clamps. The swimming attachment consisted of umbrella-shaped propellers,



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DONNING THE EDLUND LIFE-PRESERVING SUIT.



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AS THE EDLUND SUIT LOOKS ON THE WATER. attached to the wrists and ankles by elastic bands. The idea was that the propellers would open and shut with the movements of a swimmer's limbs and thus propel him through the water. The official board, while recognizing the possible usefulness of such an equipment, considered the apparatus rather cumbersome and not susceptible of quick adjustment.

The same year the Life-Saving Service had submitted to it the McNicholas life-preserver. This device consisted of a rubber sleeveless coat containing air chambers capable of being inflated by the wearer by means of air tubes. Leather flaps were attached to the hands and feet to aid the wearer when swimming. There was a mirror which could be elevated to a position perpendicular to the body to show the wearer while swimming upon his back any obstructions that he may approach. Two bags were attached about the waist, partly inflated to give them buoyancy, and designed to carry provisions and water. It was an ingenious device but not adapted to the requirements of the service.

Only a few years ago the Life-Saving Service examined the Rader life-preserver. According to the official report this affair consists of a vest or sleeveless coat, made of rubber-lined cloth, and provided with a number of air pockets capable of being inflated by means of a tube or mouthpiece that could be sealed by a screw valve. As will be seen, there is a persistent similarity of effort and general form present in most of these inventions. Today, the "Gieve" life-saving waistcoat, an English invention, gives us a modification of a combined garment for every-day wear and an inflatable rubber ring or belt. It is a good illustration of compactness, efficiency and readiness. The wearer has only to blow air into it through a small flexible tube and he is insured ample buoyancy for keeping his head and shoulders above the water.

One of the particular advantages of the rubber life-belt is that its proportions can be made such that it will not interfere with the motions of swimming while yet providing the needful sustaining buoyancy. With the cork life-belt, on the other hand, the thing is so bulky that it seriously hampers efforts towards self-propulsion, and the ultimate safety of the wearer may frequently depend upon his reaching some definite goal or point. So well is this matter of compactness recognized as a desideratum that in thousands of pleasure craft and in nearly all modern submarines—where space is decidedly precious—the life-preservers are made of rubber and are inflatable. In under-water boats this is particularly important, because the passages of escape are narrow, and men wearing cork life-preservers would find it extremely difficult if not impossible to get out of a sinking submarine through the average hatchway.



THE GIEVE INFLATABLE
WAISTCOAT.

Possibly one of the most ingenious affairs of recent design is the life-saving handbag invented by John L. Edlund, a Norwegian. Ordinarily, this grip has the outward appearance of a handbag of goodly proportions, and can actually be used as such. But when turned inside out the thing becomes a one-piece garment made up largely

of rubber-lined cloth into which the owner can crawl and seal himself water-tight before jumping overboard. There is a dead-light fitted with a glass plate which permits him to look out, and a couple of valves in the top of the arrangement provide a way for the admission of fresh air. As one of our illustrations shows, a man weighing 160 pounds does not overtax the reserve of buoyancy; and by putting his hands in the hollow flippers it is possible for the occupant of this garment to propel himself through the water. Food and water sufficient for a number of days can be carried inside of this novel dress. The prime objection that can be offered to the equipment is that the bag on shipboard would be filled with things and probably stored in the owner's stateroom when urgently needed. In other words, it would be inaccessible if the vessel were sinking rapidly.



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EQUIPPED IN THE YOUNGREN SUIT,
READY FOR THE PLUNGE.

A somewhat kindred although not exactly similar life-saving suit has recently been invented by a German engineer, and for water tightness a rubber fabric is relied upon. In this case, the feet are not free to assist in self-propulsion, and in order to maintain the dress upright when occupied and in the water, a perforated metal bucket forms the lower end of the suit. The weight of this, when filled with water, keeps that part of the dress lowermost. The whole suit is packed in this can when not in service. A still closer return to Paul Boyton's outfit is that recently invented by Carl G. Walle, of Brooklyn, N. Y. He has a three-piece suit of rubber fabric consisting of a water-tight hood, a jacket, and trousers with rubber boots attached.

In order to bring the history of life-preservers down to the latest moment, mention should be made of a device demonstrated in New York harbor on the 16th of last month by Mr. Youngren, of Wyoming. This consists of a



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FLOATING ON THE SEA IN THE YOUNGREN SUIT.

waterproof union suit of rubberized fabric which entirely envelops the body, fitting tightly, with an elastic band around the neck. Buoyancy is afforded by a belt which goes around the

waist and over the shoulders, made of kapoc, a new substance resembling cotton. In order to keep the figure in an upright position, 5-pound lead weights are placed at the feet. The outside pressure of the water naturally sends the air within the suit up around the neck and shoulders, making an additional agency for keeping the body upright.

The inventor believes that by the use of this suit the shipwrecked mariner may not only float for several days, but float in comparative comfort, having a supply of food and water. The latter is provided for by a rubber bottle attached at the waist outside of the suit and furnished with a rubber tube long enough to reach the mouth. The food is kept inside the suit and by simply slipping the elastic neckband up to the forehead the wearer can eat in dry comfort. The weight of the entire suit is 15 pounds, and it can be folded into comparatively small compass. The first of the two accompanying illustrations shows the wearer of the suit prepared for his plunge into the water, and the second shows him comfortably floating about on the surface.

To save persons from drowning has a twofold phase. The first, that of keeping them from sinking, has been the aim of the various apparatus we have already described in which rubber figures so importantly; but it is no less desirable that some ready means be provided for the recovery of those that have gone to the bottom and yet can be resuscitated if brought to the surface for treatment soon enough. The Germans have undoubtedly blazed the way in this latter effort, and the well-known Draegerwerk, at Luebeck, has evolved an exceedingly efficient and novel equipment for just such vital emergencies, and a great many of these are now in use abroad.

Hitherto in drowning accidents where the body has been carried out by currents or undertow, the only sort of rescue work has been by means of diving apparatus which, of course,

ment can be put on in a few seconds, gives the rescuer unlimited freedom of movement, and makes him independent of external air supplies for at least a half hour. The diver carries with him his own air supply in steel bottles filled with compressed oxygen, which regenerates the air confined within the helmet. In a general way in construction and operation this apparatus is similar to that used in rescue work in smoke and noxious fumes, which was described in detail in the issue of this publication for March, 1915.

After donning the Draeger outfit, the rescuer jumps into the water over the spot where the body is believed to be, and is immediately carried to the bottom by means of weights. He can move about till he finds the body. He then encircles it with a rubber belt which he inflates from a small steel bottle of compressed air. The body immediately rises to the surface and the rescuer, detaching his weights, rises with it. This apparatus is a part of the equipment of the crews on the German submarines, as was mentioned in the article on "Rubber's Vital Part in the Submarine," in the issue of THE INDIA RUBBER WORLD for last June.

The British have evolved an escape dress for a like service in submarines, and the well-known English firm of Siebe, Gorman & Co. is directly responsible for this development in which water-tightness is obtained by the generous use of rubber. Our illustrations suffice to give an excellent idea of this outfit and its working. Like the German Draeger dress, the English equipment is provided with a combined purifier and oxygen



THE SIEBE-GORMAN LIFE-SAVING
OUTFIT FOR SUBMARINE
SERVICE.



THE SIEBE-GORMAN APPARATUS AT THE SURFACE.
The wearer has inflated his buoyant belt and has opened the helmet face plate.

necessitated a supply of air from above the surface of the water, and consequently required a pumping crew. In most cases there was no such apparatus available, and even where it was it proved cumbersome and slow to operate, while naturally it greatly restricted the movements of the diver. The new Draeger equip-

ment need not lack for fresh air for a considerable period. When the surface is reached, the wearer is able to inflate a flexible chamber which surrounds the jacket, forming a life-belt, and then he can open the glazed port in the front of the helmet and breathe freely from the atmosphere. Siebe, Gorman & Co. have supplied many hundreds of these rescue outfits for the British and other foreign services.

It would take a long list to cover the manifold forms rubber has taken in the effort to provide means to keep people afloat and to prevent their drowning. Many thousands of these are in use today. Besides these, other buoyant rubber devices are in continual use in the teaching of people to swim or in making it possible for them to venture into the water quite free from any risk.

If human ingenuity can accomplish it, Goodyear's dream of some device universally effective in saving human beings from drowning will yet come true.



THE DRAEGER APPARATUS FOR
RESCUING THE DROWNED.

What the Rubber Chemists Are Doing.

SOLUTIONED fabrics used in building automobile tire casings may be injured by action of sulphurous or sulphuric acid formed during the vulcanization process. Protection against this possibility may be secured by impregnating the fabric, previous to solutioning, with such salts as the double sulphates of zinc and ammonium, magnesium and ammonium, or acetate or carbonate of ammonium. The amount of these salts should vary from five to thirty per cent. of the rubber employed in the tire, and if desired may be added to the rubber solution as a compounding ingredient.

V. Cayla, in a recent issue of "Le Caoutchouc & la Gutta-Percha," writes on the use of sodium bisulphite in the preparation of plantation rubber.

The object of using bisulphite of soda is to preserve the light color of plantation rubber by retarding oxidation. The matter, therefore, does not concern smoked sheets, biscuits or fine hard Para, which are always dark in color.

Without the use of bisulphite, plantation varieties, after being prepared, frequently show grayish in color, more or less dark, sometimes with dark stripes on a lighter ground. This coloration is not due to the incorporation of impurities in the crude gum but to chemical modification. It is a much discussed point whether this modification has any effect on the rubber from the manufacturer's standpoint. It is a fact that lack of uniformity in appearance substantially depreciates the value of the rubber with purchasers, practically irrespective of other more important qualities.

The cause of this loss and inconvenience to plantation rubber producers was first overcome in the Federated Malay States by the addition of bisulphite of sodium to the rubber latex. Practically all the pale crêpe is now so prepared. Plantation practice varies with circumstances. An authority, Mr. Barrowcliff, makes the following statement regarding the proportions of bisulphite employed: The minimum proportion of bisulphite that produces any effect on the color of the rubber is one part of bisulphite to 6,500 parts of latex. This amount gives fine crêpe and sheet rubber. It corresponds with the addition of one half ounce per gallon of latex, of five per cent. bisulphite solution in water. Thin sheets with a strong tendency to oxidize and intended for smoking, and undiluted latex especially rich in rubber require an ounce of five per cent. solution to 3,250 of latex. Barrowcliff recommends, for the preparation of pale crêpe, the use of one part of bisulphite solution in 1,600 of latex, although one part to 400 of latex may be used for the thinnest crêpe. The presence of bisulphite in rubber impedes its drying; consequently in the preparation of thick stock small proportions only are employed.

B. J. Eaton prescribes two ounces of bisulphite to ten gallons of latex containing 15 pounds of rubber.

Vulcanization tests made in the Federated Malay States have shown bisulphite-treated rubber to be equal, not to say superior to that untreated. Manufacturers have, however, declared that rubber so treated loses quality and has a tendency to become brittle. These conclusions of the manufacturers are quite contrary to those published by Barrowcliff in 1912, who stated that bisulphite needed to be used only in small quantities and that it was entirely eliminated from the rubber.

Clayton Beadle, H. P. Stevens and Sydney Morgan, in their study of the effect of bisulphite in preparing rubber from latex, compared the properties of bisulphite-treated and untreated samples of rubber under identical conditions. They found very little difference between these samples, but proved that those treated with bisulphite were slightly superior to the others and concluded that bisulphite is excellent in its effect in obtaining uniformly pale rubber.

The inconvenience of using bisulphite is that the treated rubber dries rather slowly, requiring from two to three days extra. It is also more difficult to smoke. For this reason the proportion of bisulphite must be adjusted to the amount required to stop oxidation, and at the same time not substantially retard the drying of the rubber. Otherwise the formation of mildew will be facilitated, which means spotted rubber and other undesirable conditions. Therefore, each planter must experiment for himself to determine the quantity of bisulphite to add to his particular quality of latex.

Barrowcliff mentions that excessive use of bisulphite may cause formation of sulphuric acid, causing detrimental effects. This is not supported by the results of Beadle, Stevens and Morgan, who state that traces of sulphite are often found in rubber not prepared with bisulphite. They have also preserved rubber prepared with sulphuric acid for five years without noting any alteration, thus proving that the presence of sulphuric acid is not injurious to rubber. Bisulphite-treated rubber is unquestionably good and satisfies the demand for the lightest-colored rubber for specific uses. Color is not an indication either of quality or lack of quality.

NEW PROCESSES IN RUBBER MANUFACTURE.

METHOD OF PROOFING FABRICS.—United States patent No. 1,154,875, James Meade. First a light coating which is partially dried, and then a heavy coating on which second layer of fabric is pressed. The machine is described in this issue.

MAKING RUBBER BANDS.—United States patent No. 1,155,325, Thomas W. Miller, assignor to The Faultless Rubber Co. Rubber is molded in the form of a tube and vulcanized and then cut into bands.

MAKING SPONGY RUBBER.—United States patent No. 1,156,184, P. Schidrowitz and H. A. Goldsborough. (See THE INDIA RUBBER WORLD, July, 1915.) Coagulating rubber latex under conditions producing a porous or spongy coagulum and fixing the pores by vulcanization.

INSULATING COMPOSITION.—United States patent No. 1,156,452, L. H. Baekeland, assignor to General Bakelite Co.

RUBBER PRESERVATIVE COMPOSITION.—United States patent No. 1,156,561, Samuel T. Smith.

VULCANIZING AND ATTACHING RUBBER.—United States patent 1,157,572, Frederick Moench. This process consists in applying a preliminary coating of rubber dissolved in a mixture of chloroform and gasoline, allowing the coating to dry, scratching the dried coating thoroughly into the face of the material and applying over it an unvulcanized rubber sheet coating; finally heating the rubber-coated article for an hour at 320 degrees F. for vulcanization.

MANUFACTURE OF A SEAMLESS RUBBER GLOVE WITH LINING OF EXPOSED ELASTIC FABRIC AND INTERMEDIATE LAYER OF ADHESIVE MATERIAL.—United States patent 1,157,646. Thos. W. Miller, assignor to The Faultless Rubber Co.

SUBSTITUTE FOR LAMPBLACK.—United States patent No. 1,156,742, Blardone, Nichols & Brugiere. Ground burned rice hulls.

TUBULAR CORDS.—British patent No. 12,629 (1914), J. D. Tew, Akron, Ohio. A number of strands impregnated with rubber are twisted together in tubular form. (See August issue.)

IMPREGNATING TEXTILE FABRICS WITH RUBBER SOLUTION.—British patent No. 17,097 (1914); G. W. Beldam and A. U. B. Ryall. The fabric on a roller is immersed in rubber solution and is wound off on another roller, also immersed in the solution, passing on its way, across the surface of one or more perforated, revolving rollers or between two plane-surfaced, perforated boxes, to the interior of which rubber solution is sup-

plied under pressure. This treatment causes the fabric to vibrate, producing a movement of the threads with the effect of assisting the penetration of the rubber solution into the goods.

COLLOIDAL SULPHUR.—French patent No. 446,692; Lumière. Crystallized hyposulphite of soda, 125 parts, dissolved in 1,000 parts of water, is mixed with a solution of dextrine, 200 parts, in 1,000 parts of water. To 300 volumes of the mixed solution, 60 volumes of 22-degree hydrochloric acid is added. The colloidal sulphur precipitated from the hyposulphite is separated by filtration, dried and used promptly, for it depolymerizes rapidly.

PATENTED TREATMENT OF RUBBER.

CONCENTRATED RUBBER LATEX.—British patent No. 24,680 (1914); Samuel Milne. A Scotch inventor proposes to concentrate rubber latex for delivery to manufacturers. The purpose of this treatment is to obviate the tedious manipulations and expensive plant required to secure dry rubber from the latex by the usual methods. The evaporation is conducted either at atmospheric pressure or in vacuum, and is not carried to the point of coagulation. The concentrated latex, while hot, is placed in suitable air-tight vessels for shipment.

The latex, prior to, during or after evaporation may be treated with any suitable preservative to prevent decay. It may also be treated under pressure to destroy by suitable temperature any germs which may induce decay, the resulting rubber not being impaired by temperatures considerably over the boiling point, at which all harmful germs would be destroyed. Thus treated and packed, rubber latex may be kept for comparatively long periods without deterioration and, when required, is in a form suitable for immediate use for a great variety of manufacturing purposes, with or without the addition of water. It can be mixed with almost any material and applied in many ways.

The concentrated latex may be further treated or dried to produce rubber in the usual form.

POLYMERIZATION OF BUTADIENE.—British patent No. 17,253 (1914); A. Heinemann. Isoprene, or a mixture of isoprene and butadiene, is dissolved in an equal volume of acetone, and sulphur dioxide is passed into the cooled solution for about four and one-half hours, or until a white precipitate ceases to form. The saturated solution is allowed to stand for four days. The precipitate is then separated and washed with acetone. When dry it has but little strength, but when molded for four days under a pressure of 6,000 pounds per square inch, to expel the oily substances, the product possesses great strength, and has properties similar to gutta percha and balata. It can be vulcanized by heat without further addition of sulphur, yielding a soft product or one similar to hard rubber.

CAOUTCHOUC FROM ISOPRENE.—United States patent No. 1,146,253; A. Heinemann. A process for the production of caoutchouc from isoprene, by first passing a substance composed of oxygen through the isoprene while maintaining the latter at a low temperature and then heating the product for a time sufficient to effect polymerization.

LABORATORY APPARATUS.

IMPROVED ANALYTICAL BALANCE.

AT the recent National Exposition of Chemical Industries in New York, an improved direct reading analytical balance was shown which is attaining deserved popularity among analysts, who are prompt to appreciate its advantage over the ordinary balance, which necessitates a rider for fine weighing. The improvement is the use of a small chain so arranged that any proportion of its weight may be progressively added to or removed from the beam of the balance and the amount of this weight read directly. The use of this chain in lieu of fine weights and rider,

promises to revolutionize the design of delicate balances and their method of manipulation. Direct readings in milligrams and tenths are not only rendered possible by the device, but the time required to make a weighing is considerably reduced. The innovation is



due to the efforts of Christian Becker of New York, the well-known manufacturer of analytic balances.

To operate the new attachment a thumb screw at the side of the balance is rotated. This controls the position of a sliding block on a vertical graduated scale. The chain is suspended with one end attached to the beam and the other to the sliding block. Movement of this block adds more or less of the chain weight to the beam till balance is obtained. Altering the chain weight can take place while the beam is in motion and the weighing progress without interruption or opening the window of the balance. Milligrams are read from the long scale and tenths of milligrams by the vernier on the sliding block. The range of the chain weight is considerable. In one of the popular-size balances the chain will weigh from one-tenth milligram to 50 milligrams. By variation in the chain weight the graduated scale can be calibrated for finer or coarser weighing. The demand for the new balance is far in excess of the facilities of the manufacturers to supply it and demonstrates the prompt appreciation of the advantages offered by the radical departure in design. [Eimer & Amend, New York.]

RUBBER FILTER RINGS.

Two new forms of rubber filter rings for use with filtering crucibles are shown in the accompanying illustrations. One of these is entirely of soft rubber and the other of hard rubber with soft rubber flanges (shown in the cross section). They are of special value where the unobstructed use of the entire sides and bottoms of porous filters is desired, as only about one-eighth

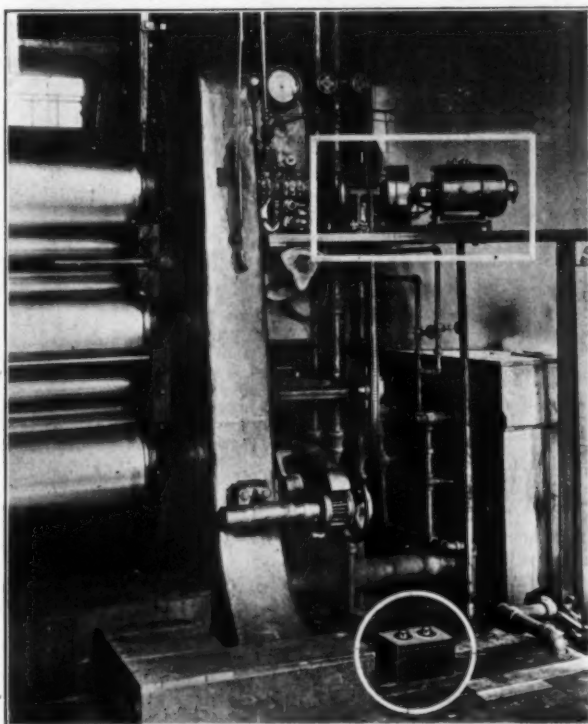


of an inch of the upper rim is grasped in the ring. The device can be instantly applied or removed for cleaning and will fit any 60 degree funnel. It can be used with any filtering crucible on the market. [E. H. Sargent & Co., Chicago.]

New Machines and Appliances.

A MOTOR-OPERATED SCREWDOWN FOR CALENDERS.

CALENDER rolls require extremely accurate adjustment and are quite heavy. The result is the use of a hand-wheel screwdown mechanism which is geared very low and operated for a considerable period of time if the rolls are to be moved any distance. Whenever a calender is changed from frictioning to sheeting, it is necessary to drop



the bottom roll to have it completely clear the sheet of rubber which is delivered from the lower side of the middle roll.

Because the hand-wheel operating the screwdown mechanism must be revolved so many times and is an extremely tiresome job, calender operators drop the bottom roll barely enough to clear the sheet. As a result, a very considerable personal injury hazard is created, for there is a fair probability of a careless operator getting his fingers caught between the bottom and middle rolls. As a matter of fact, many accidents have occurred which were directly due to the hand-wheel.

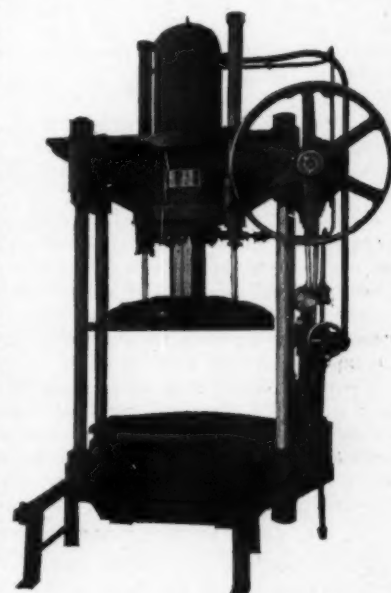
The accompanying sketch on this page shows diagrammatically the manner of installing a motor screwdown mechanism. In this, the hand-wheel ordinarily employed is removed and a sprocket wheel for silent chain drive substituted. The motor screwdown mechanism is placed at one side and operatively connected with the sprocket on the screwdown shaft by a suitable length of silent chain. The usual clutch for selecting top or bottom rolls is retained. Two control pedals, one for opening, the other for closing the rolls, take the place of the hand-wheel. The improvement is a notable one and will at once be appreciated by all practical rubber men. The old hand-wheel with its slow, laborious movement and the ever present element of danger in its use, can now be consigned to the scrap pile. [The Cutler-Hammer Clutch Co., Milwaukee, Wisconsin.]

SOUTHWARK SOLID TIRE PRESS.

This is a belt-driven 200-ton hydraulic press for forcing solid tires on rims.

One point of superiority is that the lower table is movable and very much lower than usual, which makes the handling of the tires much easier; while in practice, two men can turn out much more work than with the older type of press. Another advantage is that the ram is brought down through the idle stroke with tank pressure, therefore no power is required for doing actual work.

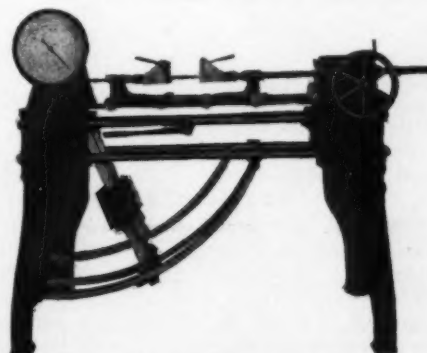
The machine is controlled from a patented operating valve so designed that at any time the press is at rest—either on the up or down stroke—the water is automatically by-passed. This feature eliminates the safety valves against which the pump frequently had to operate on other types of machines. [Southwark Foundry & Machine Co., Philadelphia, Pa.]



THE SCOTT FABRIC TESTER.

This tester is known as the horizontal type and is designed for heavy work. It has two heavy cast-iron frames holding four solid steel bars $1\frac{1}{2}$ inches in diameter.

Resistance to the pull on the sample is obtained by dead weight and there are no springs to influence the test. The recording head is a one-piece casting rigidly fastened to the frame. The main shaft rotates in two frictionless ball bearings protected by dust caps. On this shaft is affixed a large metal drum having a finished surface 4 inches in diameter to receive a chain connecting



with the head clamp. Attached rigidly to each side of this drum are two finished steel bars heavily riveted at their lower ends to form one solid unit. These double bars carry the resistance weights, which are iron and made in sections for convenience in handling. The capacity of the machine is determined by the number of weights placed upon the levers. Two

rows of graduations can be placed upon the dial, the outer row reading from 0 to any capacity desired up to 2,000 pounds. The inner row may be made to read from 0 to any capacity desired so that by removing certain weights a more delicate machine is obtained for lighter materials. Thus a machine for tire fabrics may be constructed with a total capacity of 800 pounds, and by removing part of the weights a machine of 400 pounds' capacity may be had for tapes, braids, etc.

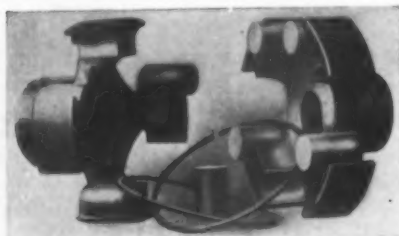
Attached to the frame of the machine are two steel quadrants, the upper sides of which are provided with machine-cut teeth. On the outer sides of the weight levers are six steel pawls of varying length which engage the rack teeth and hold the weight levers and dial pointer at the exact position of the break. A third quadrant without teeth is suspended from the frame and passes between the weight levers connecting with a long hand lever on the head end of the machine. To reset the weight lever and dial hand, it is only necessary for the operator to pull this lever.

The driving mechanism is enclosed in a heavy iron box supported on the frame. The main driving shaft extends through this box in a horizontal position and is provided at the back with a pair of 10-inch tight and loose pulleys and shipping mechanism to receive a 1½-inch flat belt. A hand-wheel, which may be removed when not in use, is fitted to the front end of this shaft for experimental and research work.

When it is desirable to drive by motor, a small gear attachment is used to replace the tight and loose pulleys, increasing the speed in a ratio of 3 to 1, thus enabling the drive to be made by a single belt direct from a one-quarter H. P. motor placed on the floor under the machine. [Henry L. Scott & Co., Providence, Rhode Island.]

THE NUTTALL FLEXIBLE COUPLING.

Flexible couplings have almost entirely replaced rigid connections between driving and driven shafts in rubber mill practice, because they eliminate the necessity of exact shaft alignment and cushion the shocks of starting and stopping heavy mills and grinders. The Nuttall coupling owes its flexibility to rubber.



The "Type A" coupling shown in the illustration is made up of two cast-iron spiders with interlocking arms which are separated by cylinders of rubber, held in place by two steel rings

that are locked in the arms of the spiders.

Power is transmitted through the rubber cylinders, compressing them and obtaining flexibility through their resiliency.

Its simple construction makes this type more desirable than ordinary couplings and the ease of renewing the rubber cylinders makes the maintenance cost very low. [R. D. Nuttall Co., Pittsburgh, Pennsylvania.]

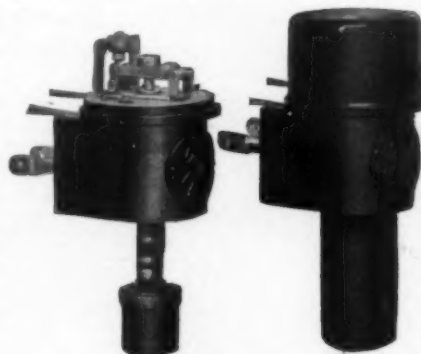
THE NILSON TILTING WIRE REEL.

The saving of time and physical exertion in loading coils of heavy wire on reels was the inventor's object in designing the tilting reel.

The operator trips the lever with his foot and the upper part is gradually lowered until the wire-carrying section is within a few inches of the floor. The guards are removed from the prongs, the coil of wire up-ended and slid upon the carrier. The guards are then replaced and the set screws tightened. When the lever is released the loaded reel is easily returned to its upright position by the operator. It can also be adjusted horizontally to feed flat wire. [The A. H. Nilson Machine Co., Bridgeport, Connecticut.]

PROTECTION OF ALTERNATING CURRENT MOTORS.

In alternating current motor installations it is common practice to provide means for automatically disconnecting the motor from the circuit in the event of sustained overload. It is also usual, except in the case of some small motors which can be thrown directly on the line under load to cut the motor out of circuit when the line voltage drops to a certain predetermined percentage of normal.



To provide for both overload and low-voltage protection of alternating current motors up to 2,500 volts and 300 amperes, the General Electric Co., of Schenectady, New York, has developed a new relay for use in conjunction with the usual type of G.E. low-voltage release and which is shown in the accompanying illustration.

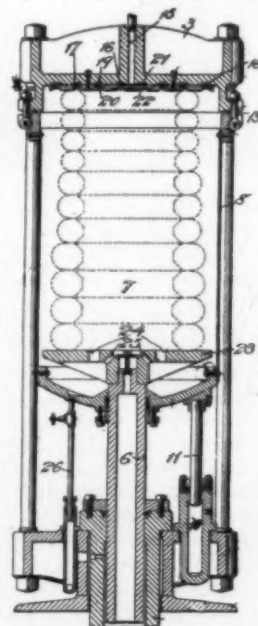
MACHINERY PATENTS.

PETER D. THROPP'S PRESS VULCANIZER.

THE vulcanizer to which this invention is applied, as shown in the illustration, is of the well-known vertical type used for curing the casings of pneumatic tires. The following description of the operation of the vulcanizer will explain the novel features of this invention.

Assuming the chamber 8 and platen 23 to be in their lowered position, the molds are stacked on the platen, and the stack is compressed against the head plate 17 by the ram 6. The auxiliary ram 11 is then put in operation, closing the chamber 8 against the head 3, where it is locked by the bolts 13. The steam, introduced through the inlet 13, impinges against the circular depression 21 in the plate 17, and is forced to travel therefrom through the grooves 16 and 19 to the outer portion of the head 3, and hence to the outer portion of the chamber 8. Upon reaching the outer portion, the steam passes down around the stack of tires 7, engaging the outer portions. When it reaches the bottom of the chamber 8 it is permitted to pass up through the holes 24 and 25 in the support 23, and thus come in contact with the inner portion of the stack of tires. Upon reaching the top of the vulcanizer it will again pass outwardly by way of the depression 22 and grooves 20, coming in contact a second time with the outer surfaces of the molds.

It will be seen that as long as the steam is admitted to the vulcanizer it will continue this cycle, thereby following a free and uniform circulation, and giving a uniform cure to the tires. The grooves 16, which are not in communication with the inlet



15, serve as additional channels of circulation during the curing period. When the cure is complete, the steam is let off through the blow-out 26, the support 23 and cylinder 8 depressed, and the tires removed. [Peter D. Thropp, assignor to The De Laski & Thropp Circular Woven Tire Co., United States patent No. 1,152,993.]

NIPPLE BEAD FORMING MACHINE.

Beads on nipples, medicine dropper bulbs, finger cots and similar articles are at present formed by hand, or in a mold. Mahoney's invention provides means whereby this work may be done mechanically in a rapid, economical and accurate manner.

In the accompanying plan view, the bodies of the nipples *A*, which are unvulcanized, are molded on the forms *B*. As the heads *D* on the operating rods (not shown) are brought into engagement with the cam plate *E*, the forms are applied to the chucks *C*. Then as the chucks pass out of engagement with the cam plate, the forms are clamped in place and both the form and chuck are rotated so that the forming roller *F* is brought into engagement with the form. The action of the roller is to turn the rough edge of the nipple outwardly, thus causing it to roll upon itself and form the desired bead. [J. L. Mahoney, United States patent No. 1,154,191.]

ROYLE'S MULTIPLE TUBING MACHINE HEAD.

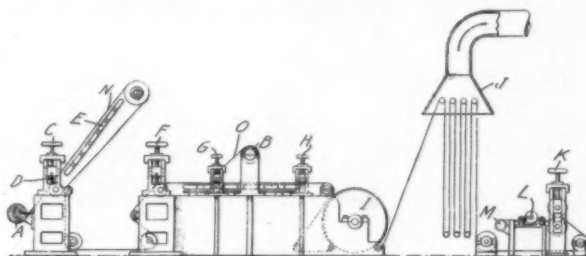
This new tubing machine head is designed for the manufacture of a honeycomb pneumatic tube section for tires, as well as for multi-perforated tubes in general. In the side elevation of the machine *A* is the stock worm, *B* is the cylinder and *C* is its jacket. The die *D* is held by the holder *E* and the tubular nut *F*. Into the web *G* of core bridge *H* is secured a gang of cores *I* with their free ends extending to the outer end of the die *D*. Another gang of cores *J* is secured into the web of the other bridge *K*, their ends also projecting outwards to the die. The inner ends of the core members pass through holes in the bridge webs and are secured by nuts screwed on their threaded inner ends.

The core members of the two gangs alternate in such a manner as to bring the outer ends of the two gangs in the desired relation to one another to produce the honeycomb structure desired. A V-shaped opening, shown in the front elevation, is made along the inner side of the tire by locating a tapered projection *L* at the mouth of the die. This opening is serviceable in applying the casing and tube section therein to the rim. [Vernon Royle, United States patent No. 1,152,978.]

MEADE'S MULTIPLE SPREADING AND DOUBLING APPARATUS.

In the illustration *A* and *B* are two rolls of fabric. From *A* the fabric *N* passes upward to spreader *C*, and from the gage knife *D* receives a light coat of waterproofing. It is dried by steam coils *E* as it passes up and around idler rollers to another spreader *F*, where it receives a heavier coating. The fabric *O*, from roll *B*, passes through a doubling device *G*. Here the two

fabrics are pressed together lightly and at *H* a second doubling device brings the two layers of fabric together without endangering the exposed surfaces. The goods are then passed over the heating drum *I*, after which they pass under the hood *J* into an upward current of air. At *K* is another doubler where heavy



pressure is exerted on the goods, which then pass through the measuring device *L* and are wound on the core *M*. [James Meade, United States patent No. 1,154,874.]

OTHER MACHINERY PATENTS.

UNITED STATES OF AMERICA.

ISSUED SEPTEMBER 21, 1915.

1,154,419. Machine for applying cement to the margin of flexible material. William F. Lautenschlager, Cincinnati, Ohio.

ISSUED SEPTEMBER 28, 1915.

1,154,663. Schleroscope for testing hardness of materials. William F. Shore, assignor to The Shore Instrument and Manufacturing Co., New York.

1,154,737. Repair vulcanizer. William F. Stearns, Exeter, N. H.

1,154,843. Collapsible core. J. H. Coffey and J. H. Coffey, Jr., Toronto, Canada, assignors of one-half to Gutta Percha and Rubber Limited, Toronto, Canada.

1,154,964. Braider mechanism. Frank Bently, Watertown, Mass., assignor to Simplex Wire and Cable Co., Cambridge, Mass.

Reissue.

13,988. Soft metal mold. William Eggers, New York, N. Y.

ISSUED OCTOBER 5, 1915.

1,155,345. Smoothing and ironing insulated wire wrappings. Adolf Finckbein, Charlottenberg, Germany, assignor to Siemens-Schuckertwerke G. M. B. H., a corporation of Germany.

1,155,909. Repair vulcanizer. Frank L. Gibson, Pender, Neb.

ISSUED OCTOBER 12, 1915.

1,156,096. Apparatus for treating plastic material. Raymond B. Price, New York, N. Y., assignor to Rubber Regenerating Company, a corporation of Indiana.

1,156,180. Pneumatic tire mold. William A. Robbins, Glen Ridge, N. J.

1,156,370. Collapsible core. Park E. Welton, Akron, Ohio, assignor to Katherine B. Welton, Akron, Ohio.

1,156,793. Repair vulcanizer. Abel Magri and Arthur V. Griffith, Port Washington, N. Y.

UNITED KINGDOM.

ISSUED SEPTEMBER 15, 1915.

12,207 (1914). Machine for covering wire, cord and elastic by winding. E. W. Cooper, 41 Coundon Road, Coventry.

12,255 (1914). Knitting, weaving and finishing fabrics for heavy belts. Soc. Anon. pour l'Exploitation des Procédés Westinghouse—Leblanc, 7 Rue de Berlin, Paris.

12,630 (1914). Cord making apparatus. J. D. Tew, Akron, Ohio. (See THE INDIA RUBBER WORLD, August 1, 1915.)

ISSUED SEPTEMBER 22, 1915.

12,889 (1914). Golf ball mold. P. A. Martin, 31 Westfield Road, Edgbaston, and J. Stanley, 70 Ivor Road, Sparkhill, Birmingham.

13,348 (1914). Electric vulcanizer for tires, hose, and insulated wire. W. T. Henley's Telegraph Works Co., 13 Bloomfield street, London Wall, and H. Savage, 77 Westcombe Park Road, Blackheath—both in London.

13,357 (1914). Tire making machine. F. C. Morton, Cambridge, Mass., U. S. A.

ISSUED SEPTEMBER 29, 1915.

13,571 (1914). Solid tire mold. A. Cockburn, 10 Merchiston Park, Edinburgh.

THE FRENCH REPUBLIC.

476,059 (April 1, 1914). Vulcanizing substance and method for manufacturing same. P. Rodier.

476,115 (August 28). Improved machine for manufacturing tires. Miller Rubber Co.

476,259 (October 5). Improved compression molds. H. A. Wickham.

The Editor's Book Table.

REPORT OF THE INTERNATIONAL RUBBER CONGRESS AND Exhibition, Batavia, October 19-23, 1914. Published in English by Filiaal Albrecht & Co., Batavia, Java. (Cloth, 8vo., 297 pages. Illustrated.)

WHILE, naturally, this report concerns itself largely with rubber planting and will in consequence be interesting chiefly to planters, still it contains some chapters on other phases of the rubber industry which will be found of value to those whose connection with rubber lies quite outside the planting interests.

The 1914 Batavia Rubber Congress and Exhibition was the second of its kind to be held in Java, the former having been held in the same city in December, 1907. The first congress was held at a time when the rubber planting industry was practically in its infancy, when many important people still doubted its success, and when rubber planters worked more or less in the dark, searching to discover the best methods for cultivating rubber trees and preparing their product for market. The 1914 Batavia Rubber Congress and Exhibition was a demonstration of the tremendous strides that have been made by the rubber planting industry during the last few years.

It was originally planned to open the exhibition on September 8, but the war made it necessary to postpone the opening ceremonies until October 19, when the official inauguration occurred in the presence of His Excellency, the Governor-General of Netherlands India.

Owing to the war many foreign members, among them the editor of THE INDIA RUBBER WORLD, were unable to reach Batavia to deliver the addresses they had prepared for the occasion.

On the first day of the congress, following the inaugural ceremonies, debates were held regarding the selection of *Hevea* for plantation purposes; the diseases and pests of plantation *Hevea* and the significance of branching in young trees. Mr. G. F. A. Steenkamp explained the exhibits of the General Planters' Association of the East Coast of Sumatra.

Catch crops, mixed cultures, planting distance and thinning-out were discussed on the second day. These discussions were followed by demonstrations of scientific methods for testing rubber by J. G. Fol, chemical engineer attached to the Netherlands Government Rubber Experimental Station in Java. The third day of the congress was given over to the consideration of artificial manure, tapping and tapping methods, and the preparation of rubber. The fourth day witnessed the closing of the congress with the usual accompaniment of speeches and distribution of prizes. But before the closing addresses, Mr. Fol was again heard in a paper on scientific testing as opposed to empirical methods of determining the value of rubber.

All these discussions, conferences, lectures and addresses, together with the composition and decisions of the jury, are given in full in this report; also the papers which, owing to the war, could not be delivered at the congress by their respective authors.

THE INDIA RUBBER WORLD of January, 1915, gave a complete list of prizes at the Batavia Rubber Exhibition as well as Henry C. Pearson's paper on "What Rubber Manufacturers Want in Crude Rubber." Other papers, not delivered at the congress but published in full in the report are: "Science and Tropical Agriculture," by Dr. F. A. F. Went, of Utrecht, Holland; "Progress Made in the Investigation of Hereditary Transmission and Its Importance in the Cultivation of Tropical Plantation Plants," by Dr. Erwin Baur, of Berlin (reported in German); "The Present Status in the Production of Artificial Rubber," by Dr. Willy Hinrichsen, of Berlin (reported in German); "Short Resumé of an Experiment in Period Tapping," by H. Wulf Walters, of Ceylon; and "Farming with Dynamite," by Harold Hamel Smith, editor of "Tropical Life."

RUBBER MACHINERY. BY HENRY C. PEARSON. PUBLISHED by THE INDIA RUBBER WORLD, New York. [Cloth 8 vo., 419 pages, 428 illustrations. Price \$6.00.]

The remarkable development of the rubber manufacturing industry has proved a great incentive to inventive ingenuity and mechanical skill. There has been a constant succession of new machines to meet the new problems of this rapidly growing branch of manufacture. Some of these have been tried and discarded as inefficient, while others have found a permanent place in rubber factories, albeit, in most instances changed and added to from time to time. To the invention of new machines and the development of old appliances, there has been no end. Yet, during the fifty years in which this process has been going on, no attempt has ever been made to tell adequately the story of this great mechanical development until Henry C. Pearson, editor of THE INDIA RUBBER WORLD, took up the task some two years ago. The results of these months of labor are given in this volume just from the press.

The book covers, in a general way, the whole subject of machinery used in the preparation of crude, compounded and reclaimed rubber. The first four chapters have to do with machines used in the basic operations of crude rubber washing, drying and compounding. And adequate mention is made of the important part cotton fabrics play in rubber manufacture and the mechanisms used in preparing cloth for coating.

The chapter on calenders shows the great advancement from Chaffee's crude machine to the perfected modern giant with motor-drive. The kinetics of washers, mills and calenders are fully covered in the chapter on clutches and drives, including the humanitarian safety stops.

Vulcanizers are given adequate space and generous illustration. General types are shown that have to do with curing by heat, steam, water, air, and electric, sulphur and ultra-violet rays; and also the cold cure apparatus for immersing the uncured rubber in a bath of chloride of sulphur or treating it to chloride of sulphur fumes. There are vulcanizing presses, screw and hydraulic, of the single and multiple ram type, with one, two and even seven platens. The enormous power and great capacity of the modern press vulcanizers described and illustrated reflect the insistent demand of the tire industry.

Tubing was formerly made wholly by hand. The author tells how the long, laborious process has been superseded by powerful machines that force the plastic rubber through intricate dies emerging in the form of tubes, solid tires, cushion tires and a great variety of mechanical rubber goods.

There are two exhaustive chapters on spreading, doubling and surface-finishing machines used in coating the surface of a sheet of fabric with rubber. The development from the original Hancock spreader to the present-day machine of accurate operation is shown by English and French, as well as American types. The vulcanizing of proofed fabrics by the electric, vapor and cold-curing processes—the methods and machines employed in impregnation and proofing and the final solvent recovery are fully described. Then follows the chapter on cement and solution making that shows the American, English and German advancement in this important part of the industry.

The first of the two chapters on extraction covers the apparatus used in separating rubber and gutta from shrubs, vines, roots and leaves. It includes guayule extraction and the German and French methods of extracting gutta percha from leaves, and is followed by deresinating apparatus.

How the vast quantities of rubber scrap are reclaimed and restored in useful form to the rubber manufacturer is concisely described in the two chapters on Reclaiming.

The great variety of instruments for recording and controlling temperature and pressure during vulcanization of rubber goods is given in detail. The book closes with a complete story in text, half-tone and outline illustration of the apparatus and machines used in the rubber laboratory; while the last, and to many the most important feature of this valuable book is the comprehensive and carefully prepared subject index.

HENDRICK'S COMMERCIAL DIRECTORY OF THE UNITED STATES for buyers and sellers. S. E. Hendricks Co., Inc., New York, 1915. [Quarto, 1,503 pages. Price 10 dollars.]

This commercial register was founded in 1891 and the present volume is its 24th annual edition. Attention has often been called in this department to the wonderful completeness of this monumental work and the accuracy with which the compilation is made. The present volume contains 1,503 pages. This is about 90 pages less than the edition of a year ago, but this does not indicate that there is less matter. On the contrary, the edition of a year ago has been revised with extreme care and everything eliminated from it that was not of a strictly current and useful character. So that while this present volume contains fewer pages than its immediate predecessor it has in reality quite a good deal of new information that has not hitherto appeared in this register.

Another pleasing feature of this latest edition is the fact that it is printed from entirely new type, which gives every page a clean and attractive appearance. This edition is also bound in leather instead of in cloth, as has hitherto been the case.

Probably most of the readers of this publication are familiar with this standard work, but to any who may not be it need only be stated that it is a complete register of practically every American industry, giving under a comprehensive system of classification and sub-classification the producers, manufacturers, dealers, and large consumers connected with all the important American industries, including railroading, engineering, contracting, architectural construction, mining, quarrying, and every line of manufacture. To show the completeness of the work, it might be added that the index alone, printed four columns to a page, occupies 147 pages.

NEW TRADE PUBLICATIONS.

AN ILLUSTRATED CATALOG OF CHEMICAL LABORATORY SUPPLIES.

An illustrated, descriptive catalog of chemical and assay laboratory supplies (483 pages) bound in loose leaf covers, has been received from Eimer & Amend, 205 Third avenue, New York. The book is a series of special circulars or pamphlets fastened in adjustable covers. This form has been adopted pending the publication of a new edition of the regular bound catalog, which apparently must wait for settled conditions in the matter of foreign importations. In certain lines American-made substitutes are being supplied.

A MEMORANDUM BOOK FROM WOOD-MILNE, LIMITED.

Wood-Milne, Limited, of Preston, England, whose specialties are rubber heels, solid pneumatic tires and golf balls, have favored their friends and customers with an attractive little memorandum book, $3\frac{1}{2} \times 6$ inches, or in other words just convenient pocket size. It contains the calendar for the present year and for 1916, a page where the owner can jot down certain personal matters like his telephone number, watch number, size of gloves, and other similar memoranda that is liable to escape one's memory, and, in addition, has several pages of general information, some of it useful chiefly to people in England, but the rest equally useful everywhere else. The remainder of the book consists of blank pages for memoranda, with a number of leaves specially ruled for an expense account. The pages are finished with a gilt edge and inserted in suede leather

covers provided on the inside with pockets for bills, stamps and tickets—altogether a useful little volume.

STANDARDS FOR RUBBER-COVERED WIRES AND CABLES.

This is a 126-page, illustrated manual published by the Underwriters' Laboratories, Inc., Chicago, for the benefit and service of users of rubber insulated wires and cables for electric lighting and power circuits. This manual, which appears to have been prepared with great care, describes in detail the system of label service of the Underwriters' Laboratories, the specifications and tests prescribed by the National Electric Code for rubber insulated wires and cables, the Laboratories' methods for testing rubber compounds used for such electrical insulations and their system of following-up and testing market samples of articles bearing their labels.

To facilitate the insertion of additional matter this manual has been bound in loose leaf form, a very obvious convenience.

"THE APPLICATIONS OF CHEMICALS IN THE PREPARATION OF RUBBER."

This pamphlet of 24 pages is from the pen of Dr. A. J. Ultée, and is published in the Dutch language by H. van Ingen, Surabaya, Java. It treats of the different chemicals used in the preparation of rubber—coagulants, anti-coagulants and bleaching and disinfecting agents. A brief appendix describes some of the diseases and pests affecting plantation *Hevea*.

DISEASES AND PESTS OF THE HEVEA BRASILIENSIS IN JAVA.

This is a report by Dr. A. A. L. Rutgers and Dr. K. W. Dammernann of the work of the Department of Plant Diseases in the Netherlands Indies, published by the Department of Agriculture at Batavia, in the form of a paper-covered booklet, quarto size, 45 pages. It is published in Dutch and in addition to the text has a number of good-sized illustrations showing the effect upon the *Hevea* tree of the various diseases and pests described.

Like many trees growing far away from their aboriginal land, the *Hevea Brasiliensis*, in the plantations of Java, is subject to a number of more or less serious diseases affecting its roots, trunk, branches and leaves. Animal pests such as wild pigs, rabbits and crickets also cause considerable damage to plantation *Hevea*. The authors have made exhaustive studies of these diseases and pests, of their causes and remedies and the results of these studies are reported in this book, which is well illustrated by photographic cuts and should be of important service to rubber planters in the East.

GOODRICH NEWS SERVICE.

The news service department of The B. F. Goodrich Co. is publishing photographs, in the form of posters 13 inches square, of current events of general interest showing, incidentally, the wide use of Goodrich tires. These posters are furnished to Goodrich dealers, together with gummed strips for pasting them in their show windows. The size and topical interest of these pictures are sure to attract the attention of passersby and fix the Goodrich trade marks in the minds of those among them who are tire users.

A LEATHER CASE FOR A BUNCH OF KEYS.

The Somerset Rubber Reclaiming Works, of New Brunswick, New Jersey, has recently distributed a useful little souvenir in the shape of a leather cover for the bunch of keys which every well-ordered man carries. A feature of value lies in a metal check, stamped with a number, which is registered at the Somerset works. Should the keys be lost, they would naturally be returned to the company, which in turn would be able to locate the owner.

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, \$6.

New Goods and Specialties.

A RUBBER COMB WITH STAGGERED TEETH.

THOSE with scanty locks little realize what discomforts accompany the combing of heavy and curly hair with the ordinary comb. For the possessor of luxuriant locks, the "Climax" comb is an unmixed blessing. The teeth of this comb are set in staggered formation, projecting alternately on either side, and at the base of each tooth there is an opening in the form of a large loop—thus securing a minimum of friction and allowing the comb to pass easily through the hair. The loop construction also makes the teeth more flexible and adds greatly to the strength of the comb as a whole. The manufacturers of the "Climax"



state that it is practically impossible to break this comb by use. [American Hard Rubber Co., New York.]

WEATHERPROOF CLOTHING.

To reproduce illustrations of all the new fall and winter styles in weatherproof clothing would require considerable space;



therefore only a limited number, by leaders in this line, are shown. Productions of several prominent manufacturers have been given a place in these columns during the past few months, but the collection would be neither representative nor complete if it did not include the styles shown in this number. These comprise a lady's coat of English tweed, in black and white or mixtures,

and a man's coat of double texture material, both water-proofed by the "Kenreign" process. [C. Kenyon Co., New York.]

They also comprise the "Swithin" sport coat for men, from the stock of a specialist in this class of apparel. This coat is made of rubberized silk. The open plait in the back affords ease of movement in golf and other sports. [Abercrombie & Fitch Co., New York.]



CHURCH TELEPHONES FOR DEAF WORSHIPPERS.

With the aid of a simple apparatus recently devised the church-goer whose hearing is defective may now listen in comfort to the entire service, no matter where he or she may be seated.

A telephone transmitter consisting of three special microphone transmitter units in an ebony-finished case is mounted on the pulpit. The receivers in the pews are of the usual watch-case variety, with a lorgnette handle provided with a special sliding extension to vary

the length from four to seven inches—thus making them so convenient for use that they may be held to the ear for any length of time without fatigue.

A jack connected to the line leading to the transmitter is placed in the pews, and each receiver has a cord and plug. To make the instrument



available, the plug is simply inserted in the jack. This telephone apparatus could be used equally well in the theatre or lecture hall. The receiver cap, handle, receiver case and mounting block molded inside of the case are made of hard rubber. [Western Electric Co., New York.]

DENTAL AND SURGICAL INHALERS IN NEW FORMS.

The greater success of present-day surgery is due not only to increased knowledge and skill on the part of the surgeon, but also quite largely to improved implements and appliances. Specialization in apparatus of this sort with an aim toward perfection has lately resulted in the introduction of two new inhalers used to produce analgesia or anesthesia, both of which are here illustrated.

The nasal inhaler is particularly suited to dental work. Besides the rubber tubing common to the general type, the nose-piece of this inhaler is made of soft rubber, and rubber pads are attached to a steel head band which adjustably supports the tubing and prevents it from dragging over the head. There are four of these soft rubber pads, two fitting across the forehead, as shown in the picture, and the remaining two forming a hollow in which the back of the head fits.



The soft rubber nose-piece can be adjusted to fit, air-tight, over any nose, and an adjuster strip makes it possible to bring any amount of pressure required against the face or to press back any desired amount of the upper lip, for work on front teeth. The inhaler, while durable, is simple in construction and can easily be taken apart for sterilization.

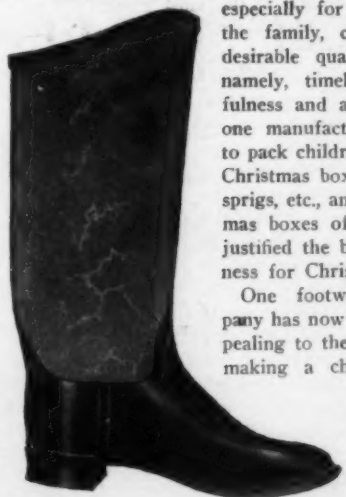
The surgical inhaler is intended for use where prolonged anesthesia is required, where it is desirable that the inhalation of atmospheric air may be controlled by the anesthetist. This inhaler has an air cushion of rubber which completely embraces the nose and mouth and which is made to fit air-tight by inflation.



This cushion is attached to a transparent celluloid hood through which the patient's lips may be seen and any necessity for admission of atmospheric air promptly noted. The hood with its rubber cushion is so connected with the valve body that the position of the patient's head may be changed without lifting the mask from the face. [The S. S. White Dental Manufacturing Co., Philadelphia.]

A RED-LEGGED BOOT FOR SANTA CLAUS TRADE.

Some active mind in the rubber trade discovered some years ago that rubber boots made particularly good Christmas presents, especially for the younger members of the family, combining four eminently desirable qualities in Christmas gifts, namely, timeliness, usefulness, healthfulness and acceptability. Accordingly, one manufacturer after another began to pack children's rubber boots in fancy Christmas boxes ornamented with holly sprigs, etc., and the sale of these Christmas boxes of rubber boots thoroughly justified the belief of their appropriateness for Christmas-time.



One footwear manufacturing company has now gone a step further in appealing to the Santa Claus trade. It is making a child's boot with a black foot and a red leg of the watered silk pattern. This boot is called the "St. Nick," and, like others especially intended for holiday trade, will be packed in individual holly boxes. [United States Rubber Co., New York.]

A NEW CABLE FOR MOTOR-DRIVEN CONVEYANCES.

A leading cable manufacturer has just brought out a new line of armored cables for motor cars, motor boats and other motor propelled conveyances. The insulation of these cables consists of high grade rubber, varnished cambric and waxed and varnished



braids. The armor is in the form of a D-shaped brass wire ribbon or a galvanized steel wire wound closely around the cable. Other types have plain rubber insulation without braided coverings. [The Standard Underground Cable Co., Pittsburgh.]

NEW HYGEIA INVENTIONS.

Rubber nipples for babies' nursing bottles constitute quite an item in the annual sales of manufacturers of druggists' sundries, the demand being constant and regular. Hitherto the nipple has been the only part of the bottle to be made of rubber, but here is a new nursing bottle, the "Hygeia Cozy," the food receptacle of which is a collapsible rubber bag. This rubber food receptacle is surrounded and supported by an aluminum jacket—open at the bottom for purposes of ventilation—which also gives support to the breast nipple, another new nursing device brought out by the same manufacturers.



There is a hidden shield in the dome of the breast nipple, about its base, which makes it non-collapsible while freely yielding in all directions. It also has a short neck, which prevents the child from accomplishing what seems to be a baby's chief aim, strangulation while feeding.

This nipple and the rubber nursing bag—which can be turned inside out for cleaning—in combination, form an innovation in nursing bottles and leave no excuse for lack of perfect sanitation in the matter of the baby's food supplies. [Hygeia Nursing Bottle Co., Buffalo, New York.]

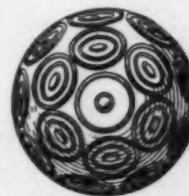


PROTECTING THE CRICKETER'S KNUCKLES.

To be sure, the game of cricket does not enjoy the same vogue in the United States as baseball does, for instance, but still there are a great many cricket players in this country and naturally they want the same sort of equipment that the cricket players of England find indispensable. As a part of this equipment, the batting glove might be mentioned. This is made of white duck with elastic bands attached to the back of the glove and going around the wrist to insure a good fit, and having in addition rubber tubes running along the fingers and over the knuckles at the back of the glove to protect the hand from the occasional impact of the ball; for the cricket ball it must be remembered is a fairly hard commodity and to have it shot against the unprotected knuckles produces a sensation by no means agreeable. This batting glove obviates any such contingency.



Another highly desirable feature in the cricketer's equipment is a bat with an inserted layer of rubber through the entire length of the handle. The handle is split in the middle, a layer of rubber put in, then the whole wound with cord. This insert of rubber serves the excellent purpose of taking the sting out of the blow when the bat strikes the ball too near the handle or too near the end—something that is always liable to occur. [A. G. Spalding & Bros., 520 Fifth avenue, New York.]



GOLF BALL DESIGN.

The accompanying illustration shows the new design adopted by Eleazer Kempshall, famous in golf ball manufacture, for use on golf or playing balls.

HAIR TONIC COMB.

Those who hope by the application of tonics and restoratives to increase the natural beauty of their hair or to repair the ravages of time or other unavoidable natural conditions; also the aspirants to enhancement of personal charm through a change in the color of their hair, will find a convenient agent in the rubber comb here illustrated.



This is an all-rubber device, the teeth being hollow, so that when inserted into the liquid cup, a pressure of the rubber bulb causes the comb to drink up the liquid, to be later distributed by gentle pressure of the bulb as the comb is drawn over the scalp. [Montgomery, Ward & Co., New York.]

RUBBER BIRD AND GAME CALLS.

The rubber bird and game call is not a new article of manufacture, but it is certainly one of the most practical articles of its kind, for it is not affected by dampness; and the near approach of the season of its greatest usefulness makes mention of it timely.

The illustration shows a duck call made entirely of hard rubber. It has a sliding device by which the tone can be instantly changed, to imitate different kinds of ducks and to meet varying conditions of weather. It is known as the "O. K." call, retails at one dollar and will give unlimited service. [New York Sporting Goods Co., 15-17 Warren street, New York.]

**RUBBER SHOCK ABSORBERS FOR THE EARS.**

An ear defender is a positive necessity for protection against damage to the ear drums and deafness resulting from excessive air vibrations induced by heavy gun fire, shell explosions, etc. The illustration shows the form of this device furnished by the British government to its army and navy.



The body of the defender is made of hard rubber, in a variety of sizes. Near the large end is a series of alternating discs of fine wire gauze, and a diaphragm of gold beaters' membrane. The latter stands free of contact, and is limited to the minutest motion by the gauze on either side of it. This instrument effectually protects the wearer's hearing by excluding violent concussions of air, and at the same time permits him to hear ordinary conversations. An ebonite tool for cleaning the open end of the defender accompanies each pair of instruments securely packed in a pocket case, in which they are held in place by rubber studs. [The Mallock-Armstrong Ear Defender Co., 86 York street, London, England.]

THE ARMOR-TRED SOLE.

This is a new rubber sole, lighter than leather, of good wearing quality, and is not a perspiration inducer. These soles, three-eighths of an inch thick, are now being worn by policemen, motor-men and others whose occupation requires a heavy-soled shoe that is flexible and comfortable. [The B. & R. Rubber Co., North Brookfield, Massachusetts.]

Dentists are using a jar for sterilizing their instruments. The top is fitted with a rubber ring like the ordinary preserve jar ring. [The S. S. White Co., Philadelphia.]

THE INTERCHANGEABLE RUBBER HEEL.

A western shoe manufacturing concern has brought out and is applying to all its shoes a new rubber heel that will help the wearer to walk straight and also to eliminate—or at least moderate—the cobbler's bill, for when he finds himself running down at the outside of the heel he can simply change that heel over



to the other shoe, bringing the worn part to the inside of the foot. The change is easily made and requires only a screwdriver for its mechanical execution.

This heel is made of tire rubber, with a metal insert that receives a similar metal plate nailed to the heel base of the shoe. A screw through these plates, in the center of the heel, holds the heel firmly in place. The heel is made in sizes to fit the various sized shoes, the plate in the heel corresponding in size to the plate in the shoe for which it is made. The line of shoes on which this new rubber heel is being used includes men's heavy work shoes, high boots for hunting, etc., and boys' shoes. [The Trolle Shoe Co., Racine, Wisconsin.]

FOOTBALL PANTS WITH ELASTIC BAND.

Of all athletic sports football is the most strenuous, and a costume facilitating freedom of movement, as well as affording adequate protection against accident, is a prime necessity for the would-be player. Nose-guards, ear-guards, face-masks, etc., have been described in previous issues of this publication. In the football pants here illustrated a new feature, namely, a broad elastic band—as will be seen in the accompanying illustration—performs the double service of holding the thigh guards in the proper place and allowing greater freedom of movement than was possible with the old-style pants. The garment is made of fine, tan-colored khaki cloth, with a separate lining, to which the felt or padded drill hip pads and felt-lined thigh guards are attached, being easily removed to permit the lining to be washed. [Rawlings Manufacturing Co., St. Louis, Missouri.]

**RUBBER COVERED SCREW DRIVER.**

The application of soft rubber to the handles of small hand tools should meet with approval, for rubber handles have many advantages. A screw driver with the handle and stem covered with rubber is shown in the illustration and is an excellent example of molded rubber work.

Such a tool is indispensable to the electrician who works around electrical machinery, particularly the low voltage type. It is insulated and therefore proof against the carelessness which in the use of an ordinary screw driver frequently results in short circuits and considerable damage.

The rubber affords an excellent grip and also immunity from blisters. The exposed steel blade measures 3½ inches and the length over all is 11½ inches. [H. D. Smith & Co., Plantsville, Connecticut.]



The Scimatco laboratory tubing is "different from any other rubber tubing on the market." So says the Scientific Materials Co., Pittsburgh.

The Tire Trade.

THE MCGRAW COMPANY OPENS PACIFIC COAST BRANCHES.

AT the annual meeting of the stockholders of The McGraw Tire & Rubber Co. held at the company's executive offices, East Palestine, Ohio, October 4, the following officers were re-elected for the ensuing year: E. C. McGraw, president; R. W. McGraw, vice-president; John Morgan, vice-president and treasurer; L. M. Keyes, secretary, all of East Palestine.

It was decided to establish direct factory branches on the Pacific Coast, at San Francisco, Los Angeles, and Portland, Oregon, under the district management of S. L. Warner, and the sales management of C. K. Whittaker, with headquarters at San Francisco. C. H. Connelly, heretofore Buffalo manager, will take charge of the Kansas City branch, while his former assistant, G. J. Marshall, will succeed to the management of the Buffalo store. R. G. Nelson, who has been connected with the McGraw sales department for the past six months, has been appointed superintendent of branches.

The company is adding new buildings of steel and brick to its plant at East Palestine which will give 800,000 square feet of additional floor space. It is also expending \$300,000 for new machinery.

UNITED STATES BICYCLE TIRES.

The United States Tire Co.'s 1916 line of bicycle tires includes 16 different styles of casings, most of which closely resemble in appearance the automobile tires manufactured by the company, such as "Nobby Tread," "Chain Tread," etc.

NEW TIRE FACTORY IN COLORADO.

The Dry Climate Tire Manufacturing Co., which was recently formed in Colorado with a capital of \$200,000, has started manufacturing operations at Arvada, Colorado, about 7 miles from Denver. This new tire manufacturing company expects in a few weeks to be able to produce 100 casings and 350 inner tubes a day. The factory as it now stands cost \$28,000 and \$35,000 of machinery has been installed in it.

BALTIMORE REGULATES USE OF SOLID RUBBER TIRES.

An ordinance of the city of Baltimore, Maryland, requires users of motor trucks equipped with solid tires to take out licenses for the use of these tires. This measure is intended to prevent users of trucks from running their machines with tires so worn and damaged that they injure the pavements.

A NEW NON-SKID TIRE CASING.



The accompanying cut shows a new non-skid tire casing, the feature of which is an exceptionally thick, heavy tread designed to combine the valuable qualities of suction-type treads with those of raised or studded types. Hence the designation "Universal Tread" which the manufacturer, the Michelin Tire Co., Milltown, New Jersey, has given this casing. The extra heavy, broad tread of special design, it is claimed, causes this tire "to stick to the ground" when the car is being started and when the brakes are applied, thus obviating slipping and the resultant friction which wastes substantial quantities of valuable rubber. Superior resiliency, perfect non-skid qualities and greater durability are the principal advantages claimed for this new casing.

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, \$6.

CAN BRAZIL BE PERSUADED TO LOWER THE TARIFF ON TIRES?

Early in October the secretary of the Rubber Club sent out a letter to the tire manufacturers calling their attention to the fact that while rubber boots and shoes entered Brazil under a 20 per cent. differential tariff, rubber tires enjoyed no such privilege, and suggesting that they make an appeal through the State Department of Washington to the Brazilian Government to have tires included under the differential tariff clause, in making up the revenue budget for the coming year.

GENERAL NOTES REGARDING TIRE MANUFACTURING COMPANIES.

The Luck Tire & Manufacturing Co., of San Antonio, Texas, is erecting a \$100,000 factory to manufacture the Luck pneumatic puncture-proof tires for automobiles. This tire was invented by John J. Luck, of San Antonio, and its qualities have been tested during the past eighteen months. It is stated that a set of tires has traveled 14,000 miles over some of the roughest roads of Texas.

The Republic Rubber Co., of Youngstown, Ohio, reports very satisfactory service from its solid truck tires. These are manufactured of a stock which resists the tendency to break and crumble by the heat developed under severe conditions of road use.

The Republic Company is marketing a new automobile tire of specially designed cord construction.

The salesmen and office force of the Philadelphia branch of the Goodyear Tire & Rubber Co. held a banquet at the Adelphi Hotel, Philadelphia, on the evening of October 15.

The plant of the Perfection Tire & Rubber Co. in Factoria—the new factory addition to Fort Madison, Iowa—is rapidly nearing completion. The output of the factory has been contracted for by an eastern jobbing firm. The officers are: J. H. Christian, president; C. R. Cole, vice-president; D. A. Stickelman, treasurer; and L. A. Rockwell, secretary.

A new rubber plant called the Sebring Tire & Rubber Co. is under way at Sebring, Ohio, a building 60 x 190 feet with power house separate being in process of construction. The company's officers are as follows: H. D. Weaver, president; C. B. Smith, vice-president; William Stevenson, secretary; Ed. Stanley, treasurer; John Hotchkiss, manager.

The Punctureless Auto Tire Co., recently formed at Akron, has elected the following officers for its first business year: W. R. Price, president; D. A. Messner, vice-president and general manager; S. Arthur Messner, secretary and D. I. Evans, treasurer.

The United States Wheel & Tire Co., which for some time has been operating at Pierre, South Dakota, has been reincorporated in Illinois with a capital of \$300,000, to manufacture automobile wheels, tires and complete motor trucks.

It is reported that the American Tire & Rubber Co., Akron, has a contract to furnish 1,000 tires weekly to the Russian government. The contract was negotiated through the Imperial Russian consul in Toronto, Canada, and it is said that it is for the duration of the war.

The new three-story brick building of the Marathon Tire & Rubber Co. at Cuyahoga Falls, Ohio, is nearing completion.

It is said that the purchase of tires just made by the Keystone Tire & Rubber Co., of 1650 Broadway, New York, is the largest cash tire deal ever made. The company has bought a million dollars' worth of casings from one of the leading manufacturers.

The Southern Tire & Rubber Co., of Augusta, Georgia, is increasing its staff from 50 to 90 employees and doubling its output, which now amounts to about 75 tires per day.

PERSONAL MENTION.

Edward F. Moloney has recently taken charge of sales in the New York territory for the Gibney Tire & Rubber Co., of Philadelphia, as manager of the New York branch. Mr. Moloney was formerly with the Firestone Tire & Rubber Co. as manager of the solid tire department of that company's New York branch.

G. A. Dodge, mechanical engineer of the Mansfield Tire & Rubber Co., Mansfield, Ohio, has recently been elected a member of the Society of Automobile Engineers.

M. H. Parsons, formerly with the Goodyear Tire & Rubber Co., has accepted the position of district sales manager for the McGraw Tire & Rubber Co., of East Palestine, Ohio.

Elno H. Trump, formerly superintendent of The Quality Tire & Rubber Co., of Hartville, Ohio, is now superintendent of the new Sebring Tire & Rubber Co., of Sebring, Ohio, which expects to be making tires by February 1, 1916.

James Couzens recently resigned his position as vice-president and general manager of the Ford Motor Co. and Frank L. Klingensmith has been appointed to succeed him. Edsel B. Ford, son of Henry Ford, succeeds Mr. Klingensmith as secretary of the company.

Mr. G. H. Stonestreet, who for the past three years has been connected with British Goodyear interests, has been appointed manager of the South African branch of the Goodyear Tire & Rubber Co., with headquarters at Capetown. Mr. Stonestreet was formerly connected with The B. F. Goodrich and Continental companies, and sailed recently for his new post.

The Knight Tire & Rubber Co., of Canton, Ohio, has appointed H. D. Palmer sales representative in New York State territory, in place of E. J. Coniff, who resigned.

A NEW "TROUBLE-PROOF" TIRE.

A new automobile tire, made by the Leather Tire Goods Co., Niagara Falls, New York, is built with a strip of chrome tanned leather placed inside the casing next to the inner tube and protecting the latter from nails, pieces of glass and similar hard objects that may come through the tread of the tire where most punctures occur. It is also claimed that when the casing is badly worn the leather will prevent it from blowing-out.

PERFECTION ASBESTOS FABRIC TIRES.

A new tire, guaranteed to be proof against puncture, blow-out, heat, water and grease, is to be presently placed on the market by a company in Fort Madison, Iowa. The peculiarity of the "Perfection" tire—as it is branded—is that a fabric made of woven asbestos takes the place of the usual Sea Island cotton fabric. Its breaker strip is woven from asbestos-covered wire.

TIRE TREAD WEAR.

An item of tread wear not commonly recognized is sliding friction. P. W. Litchfield, of the Goodyear Tire & Rubber Co., defines this as the friction between the tire and the ground due to surface motion of the tread. As the tire surface is doubly curved, flattening it against the ground involves a certain amount of surface distortion. When this distortion is transferred from one part of the tread to another, a continuous sliding friction is produced.

NO WONDER THE TIRES ARE STRONG.

A STORY told by pictures is much more impressive than a story told by words. For instance, the Goodrich company, describing the cable cords which form the body of the Silvertown cord tires, speaks as follows:

"With 144 strands of cotton thread made from long fibered Sea Island Cotton, each one impregnated with rubber which has literally been driven into it, and then cabled together

and again impregnated with rubber, each cord which goes into a Silvertown is capable of standing approximately 250 pounds of straight tensile pull."

That is a good description, brief and intelligible; but one really gets a better idea of the strength of this cord by looking at the accompanying illustration, which shows a stocky gentleman, said to weigh 190 pounds—and he certainly looks it—sustaining his whole weight by a single Silvertown cord.



A SINGLE SILVERTOWN STRAND HOLDS A 190-POUND MAN.

It might be added that in constructing the tires these cords are laid across the tread at an angle of 45 degrees. One layer is placed above the other at an angle of 90 degrees. Two of these layers constitute the carcass of the tire, on top of which are laid a cushion drum, breaker strip, and the tread rubber.

CORD TIRES AT THE ASTOR CUP RACE.

The Astor Cup Race held October 9 at the Sheepshead Bay Motor Speedway, near New York City, was a notable triumph for American built automobiles and American tires. The distance, 350 miles, was covered by the winner in 3 hours 24 minutes 42 seconds—an average speed of 102 miles per hour—and the second car finished within 90 seconds of the winner. Only six cars finished, and out of these six the first five were American machines equipped with Goodrich Silvertown Cord tires. In fact the sixth car at the finish—a French Delage—was also running on "Silvertowns," and averaged better than 84 miles per hour.

In reading these figures few realize the tremendous strain such terrific sustained speeds impose upon rubber tires. But in spite of the terrible grind only ten tires were changed during the entire race. Of these, nine were on right, or outside wheels; the only left tire changed being replaced as a measure of prudence because it appeared dangerously worn. The winning car covered the distance of the race without a single tire being changed.

News of the American Rubber Trade.

ENGLAND DENIES INTERFERENCE WITH AMERICAN TRADE.

SO many charges have been made in influential quarters that Great Britain was seriously interfering with the legitimate trade of the United States with neutral European nations for the benefit of her own exporters that the British government thought the situation warranted a reply, and this was made early in October by Sir Edward Grey in the form of a note handed to Ambassador Page. Sir Edward cites facts and figures to prove that there can have been no interference with American trade to neutral countries in Europe for the simple reason that this trade has, as a whole, largely increased since the beginning of the war. Referring to the rubber situation, he speaks as follows:

Re-exports of rubber from the United Kingdom to Scandinavia and the Netherlands declined from 17,727 centals of 100 pounds in January-May, 1914, to 16,693 centals in January-May, 1915; on the other hand exports of rubber from the United States to the same destinations increased from 1,579 centals to 5,040 centals. Larger re-exports of rubber to the United States from this country have indeed taken place, but all other re-exports of rubber have declined during this period, as the following figures show:

| | Centals of 100 pounds. | | |
|--------------------------------|------------------------|--------------------|-----------------------------------|
| | Jan.-May, 1914. | Jan.-May, 1915. | Increase in 1915 over 1914. |
| To all destinations..... | 553,864 | 667,509 | *113,645 |
| Of which to United States..... | 248,435 | 418,619 | †170,184 |

*Or 20.5 per cent. †Or 68.6 per cent.

MORE RUBBER TO THE UNITED STATES.

It will therefore be seen that this country has actually been supplying more rubber to the United States at the expense of other neutrals, while American exporters have taken advantage of this to ship increased quantities of rubber to Scandinavia and the Netherlands.

RUBBER BROKERS MAKE A CLAIM ON THE GOVERNMENT.

When the United States Government decided that it must raise more revenue last year, it passed an act requiring the placing of a ten-cent stamp on every contract. The same act, dated October 22, 1914, called for a special tax of twenty dollars for each commercial broker. This added considerably to the expense of doing business. The law required a ten-cent stamp on every contract passed, whether it was for a hundred-ton sale or just a single case of pontianak, on which the broker's commission might amount to only five cents.

But the brokers, of course, are all patriotic men, and they bought the stamps in ten-dollar lots, and stuck them on the contracts as soon as they were closed and forwarded to the importers or sellers. Then the sellers, in turn, sent memoranda of receipt of these contracts to the buyers and slapped on each such acknowledgment, or contract, a similar ten-cents' worth of gummed paper.

This seemed to be double taxation, but it continued until somebody waked up to this fact. Then there came a ruling that the broker was not the responsible party to the transaction, but that all the responsibility for filling such contract rested with the seller, and that the seller, and he only, need place the adhesive tax certification on his contract. The importers immediately notified the brokers, and now the brokers are endeavoring to secure from the government the amounts they have expended under the misunderstanding that they were liable. Many of them had a larger or smaller number of ten-cent stamps on hand. These they turned in to the Revenue offices of their districts, and with them claims for all the stamps they have stuck on their contracts.

These claims are still in abeyance. The brokers have heard nothing from the government, but such matters move slowly, if they move at all, and the brokers hope to get a refund, some day, which will go on the credit side of their profit and loss account.

WHO HAS LOST 800 POUNDS OF RUBBER?

A circular was sent out on October 22 from the office of the secretary of the Rubber Club to crude rubber importers, dealers and brokers, calling their attention to the fact that 800 pounds of crude rubber had recently been bought by the captain of a railroad barge lying at New Brighton, Staten Island, from the captain of a scow, which at the time of purchase was tied to one of the North River piers. As obviously this is a very unusual channel for the distribution of crude rubber supplies, the transaction on the face of it savors of irregularities, and it is highly probable that somebody is short 800 pounds of rubber. Any one who discovers that he is in such a situation can apply to The Rubber Club of America, 17 Battery Place, New York, for further information.

THE NEW YORK ELECTRICAL EXPOSITION OF 1915.

The Electrical Exposition and Motor Show of 1915 was held at the Grand Central Palace, New York, October 6-16. The large attendance attracted by the promise of new and interesting features was amply repaid by the many excellent exhibits.

The great electrical achievement of the year, the bringing of two cities three thousand miles apart within speaking distance of each other, was given a popular demonstration. Each day an average of 1,500 "listened in" on the trans-continental telephone line, and heard a brief account of the day's happenings at the Panama-Pacific Exposition, some music, and the roar of the Pacific Ocean, breaking against the rocks at the entrance to San Francisco harbor.

There were altogether 163 separate exhibits and among those attracting the most attention were the exhibits of the Army, Navy and Treasury Departments of the United States Government, the Treasury Department showing one of its electrical money laundries, washing and ironing paper money presented for that purpose by visitors to the show.

The General Electric Co. departed somewhat from the usual display of miscellaneous material in an attempt to make an exhibit of more educational value—the principal feature being the daylight motion pictures, illustrating the methods employed in the manufacture of various electrical devices.

The Westinghouse Electric & Manufacturing Co. exhibited a complete collection of electrical devices for the home, shop or office. The particular feature was the new Westinghouse electric range, which has an automatic device which allows the housekeeper to put in a meal at any time, set it for the hour at which the dinner is desired, and then leave the rest to the range. At the appointed hour the dinner will be found cooked to the minute.

RUBBER COMPANY DIVIDENDS.

At the annual meeting of the Swinehart Tire & Rubber Co., of Akron, Ohio, held on September 29, the regular quarterly dividend of 1½ per cent. was declared.

On October 7 the board of directors of the United States Rubber Co. declared a quarterly dividend of 2 per cent. on the first preferred stock and a quarterly dividend of 1½ per cent. on the second preferred stock of the company, to stockholders of record October 15, payable October 30.

Directors of the Kelly Springfield Tire Co. have declared a quarterly dividend of 3 per cent. on the common stock, payable November 1 to holders of record October 15. The previous disbursement made was 1½ per cent.

At the annual meeting of the Electric Hose & Rubber Co., Wilmington, Delaware, October 19, a semi-annual dividend of 5 per cent. on the common stock of the company was declared.

J. W. AYLSWORTH.

TO have been intimately associated with Thomas A. Edison for 26 years is in itself a signal distinction; and to have taken out over 60 patents, all marking distinct progress in the development of new and widely useful substances, is certainly an accomplishment of no mean order. Both of these honors belong to J. W. Aylsworth, technical chemical expert, whose laboratory is in East Orange, New Jersey, and who is familiar to the rubber trade as the inventor of synthetic gums and waxes known under the trade names of "Condensite" and "Halowax."

Mr. Aylsworth is a native of Indiana, and graduated from Purdue University in that State. Twenty-six years ago he became connected with Thomas A. Edison in his work in the famous laboratory in West Orange. In his work as a consulting chemist for the great inventor, he has developed and patented many improvements in incandescent lamp filaments, the Edison storage battery, phonograph recording compositions, record molding processes, and in many other products of modern inventive genius. He is recognized among chemists as a man of unusual attainments in that science.

Early in 1906 Mr. Aylsworth became acquainted with the remarkable properties of phenolic condensation products, and immediately recognized their applicability for use in making improved phonograph records. In the spring of 1908 his experiments had advanced to such a state that The Edison Co. decided to undertake the development of disc record manufacture with his phenolic condensation product composition, the "Diamond Disc Record" being the result.

Somewhat later the Condensite Co. of America was formed to develop the manufacture and use of these substances for other industries for which he foresaw their eminent utility. This company has made rapid progress in developing products of marked value to the electrical industry and in the plastic molding art, operating under more than 40 of Mr. Aylsworth's patents relating to "Condensite," and nearly half as many relating to "Halowax."

Mr. Aylsworth still maintains his relations with Mr. Edison, whose chief consulting chemist he now is, and is also actively engaged as the technical director of the Condensite Co. of America.

WILLIAM E. HARDY.

AMONG those who gave heed to that venerable piece of advice heard very frequently a generation ago, "Go West Young Man," was William E. Hardy, recently appointed sales manager of the Boston Belting Co. Later, however, he heard the more modern slogan, "Back East," and concluded that that probably fitted his personal case best—so back East he came.

Mr. Hardy was born in a rubber atmosphere, so to speak, for he first saw the light in Akron, June 5, 1879. His education was

secured in the public schools there, and later he graduated from Buchtel College, an institution which has done its share to make Akron famous.

Although William Hardy's thesis at graduation had for its subject "Rubber Substitutes," his studies specialized more on mining and metallurgy, and on graduating he joined his father, working at mining in the wild southwest, Arizona, Colorado, Nevada and Old Mexico. During the years spent in this industry he had many interesting experiences, but Mr. Hardy is a modest man, rather averse to talk about himself. It is certain, however, that he could tell some good stories of adventure were he so inclined.

Then, turning his face eastward, young Hardy worked for a year for the Brown Hoisting Machine Co. in Cleveland, after which he joined the Diamond Rubber Co. factory forces in Akron. His job was running a belt press in the press room. But not long was he working on that press. He was made a factory inspector, then became assistant sales manager of mechanical goods. This was the record of the first seven years with the Diamond Rubber Co. For many months the management urged him to go to New York and take the supervision of sales in that city, and at last he was prevailed upon to do so. He held that position for a couple of years, leaving this to return to Akron to become sales manager of mechanical goods of The B. F. Goodrich Co., which had absorbed the Diamond company.

Mr. Hardy served these two companies eleven years. When the Boston Belting Co. was looking for the best man in the country to take up the work of Mr. Elson, whose prolonged illness prevented him from carrying the load, the officers decided upon Mr. Hardy as the man, and negotiations were at once opened to secure him, with the result that he is now installed as sales manager, with his office at the Roxbury factory of that company.

Mr. Hardy is a young man of ability and energy, a man of experience, with a record of success. He is married, has two interesting children and will live in Brookline as soon as the railroads deliver his *lares et penates*, long overdue, from Akron. At present he boasts of no club memberships, but acknowledges that he is entitled to wear the square and compass. That he is a man of many friends any one will affirm, after being with him ten minutes, and that he will make a host of new ones in his present position is unquestionable, as is also the prediction that he will prove a conspicuous success in this new and responsible position.

MR. WADE MADE FACTORY MANAGER.

Mr. J. Arthur Wade has been appointed factory manager of the mechanical rubber goods and the general rubber goods departments of the Montreal mill of the Canadian Consolidated Rubber Co., Limited. As this factory makes all of the company's hose, belting, packing, druggists' sundries, molded goods and plumbers' supplies, it is obvious that the new manager will have his hands full. Mr. Wade started in the rubber industry in 1895 with the Revere Rubber Co. Eleven years later he joined the Canadian Consolidated Rubber Co., Limited, of Montreal, and has been with them ever since, excepting two years—1912 and '13—during which he was general superintendent of one of the New England mills.

DR. DAHNE SAILS FOR BRAZIL.

Dr. Eugenio Dahne, whose fine exhibit of Brazilian products at the San Diego Exposition was mentioned in some detail in the September number of this publication, passed through New York October 15 on his way back to Brazil for a short visit. The San Diego Exposition has fully lived up to the expectations of its promoters and Dr. Dahne's Brazilian department has been one of its most attractive features. The Exposition will close until the end of the year, when it will be re-opened on a more extended scale for another six months. Dr. Dahne expects to return to this country in December.

PERSONAL MENTION.

One of the most interesting lists of names published in the New York papers in some time was that which appeared early in October showing the assessments on personal property made by the Tax board. The first two names on that list, as everyone might imagine, were John D. Rockefeller and Andrew Carnegie. The fifth name was James B. Ford, vice-president of the United States Rubber Co.

An International Trade Conference will be held under the auspices of the Foreign Trade Department of the National Association of Manufacturers, December 6 to 8, at the Hotel Astor, New York City. On the general committee of arrangements are M. A. Oudin, manager of the foreign department of the General Electric Co.; Edwin C. Shaw, vice-president of The B. F. Goodrich Co., and George E. Long, vice-president of the Joseph Dixon Crucible Co., Jersey City.

At the annual meeting of Wright & Ditson, dealers in athletic goods, Boston, recently held, W. H. Cook was elected to the position of secretary in place of Temple F. Craige, deceased.

T. Frank Manville, of H. W. Johns-Manville Co., has been elected president of the Wright Aeroplane Co., recently organized with \$1,000,000 capital to take over and develop the aeroplane patents purchased from Orville Wright.

Chester J. Pike, for many years connected with the sales department of the United States Rubber Co., and more recently interested in advertising—especially in the preparation and placing of advertising relating to rubber footwear—was elected director of the Advertising Agents' Association at their annual meeting held recently in Boston.

Mr. J. B. Linerd, who joined the Ajax-Grieb Rubber Co. two years ago, having charge of their New York office, has now been appointed the company's general sales manager.

John H. Kelly, vice-president, and Frank V. Springer, manager of the export department of the Republic Rubber Co., returned recently from a month's visit to Europe in the interest of the company's foreign trade, which has been especially active in truck tires. This was Mr. Springer's third trip to Europe during the present year.

Morton L. Paterson, who has been continuously connected with the footwear business since 1887—largely in the rubber shoe specialty—has recently assumed management of the Converse Rubber Shoe Co.'s business at Chicago.

Charles R. Sargent, formerly manager of the Cleveland branch of Innis, Speiden & Co., importers and commission merchants in chemicals and colors, Chicago, has been put in charge of the company's Chicago branch. He will still retain general supervision of the Cleveland office.

Joseph T. Mahon, of the Henderson Rubber Co., Baltimore, recently visited New York City and northern New Jersey in the interests of his company. He reports an active inquiry for "Rub-Hide," an ingredient manufactured by the Henderson company for the purpose of strengthening and preserving rubber.

William E. Barker, manager of sales of the United States Rubber Co., who sailed for Europe late in September on important business in England and France, embarked for home on October 22 and is expected to arrive in New York about the first of November.

E. H. Sprague, for many years president of the Omaha Rubber Co., Omaha, Nebraska, has resigned from that position and William McAdam, formerly manager of the Interstate Rubber Co., has been elected to succeed him. J. L. Eastman, for many years a salesman for the Interstate Rubber Co., has been elected manager to succeed Mr. McAdam.

E. W. Rutherford, lately superintendent of the Wales-Goodyear rubber shoe factory at Naugatuck, Connecticut, has been appointed assistant to General Footwear Factory Manager Myron H. Clark, of the United States Rubber Co., and Charles R.

Haynes has succeeded Mr. Rutherford as superintendent of the Wales-Goodyear mill.

The annual meeting of the Western Association of Shoe Wholesalers, held in Chicago late in September, was attended by George H. Mayo, merchandise manager of branch stores of the United States Rubber Co., and also by Charles A. Coe, the Eastern selling agent of the same company.

MR. WADLEIGH SAILS FOR SINGAPORE AGAIN.

The issue of THE INDIA RUBBER WORLD for January, 1914, contained a brief account of the activities of W. L. Wadleigh, of Boston, in the importation of crude rubber and its distribution to the manufacturers of that city and vicinity. After being engaged for a number of years in the distribution of various grades of rubber from Mexico, he determined to make a visit to Singapore with a view to forming associations there for the distribution of plantation rubber in this country; and in carrying out this project he sailed for Singapore in January of last year, remaining in the East for a number of months, and establishing the Wadleigh Co., Limited, of Singapore.

After a year or more in the United States he has sailed again for Singapore, embarking on October 24 on the steamship "Finland," via London and Marseilles, where he will transfer to a P. & O. steamer for the East. He plans to return to this country next May. Before sailing he announced that The Goodyear Tire & Rubber Co. had arranged with the Wadleigh Co., Limited, of Singapore, to purchase crude rubber for The Goodyear Company in the Far East. The Wadleigh Company will also act as special selling agent for the Goodyear products throughout the Straits Settlements and the Malay Peninsula.

EDISON AND THE ELECTRIC INCANDESCENT LAMP.

EDISON DAY, October 21, commemorated the thirty-sixth anniversary of the invention of the electric incandescent lamp and was celebrated in honor of its inventor, Thomas A. Edison. On December 21, 1879, just two months to a day after Mr. Edison first successfully made a carbon filament glow in a glass bulb from which the air had been exhausted, the news of the great invention was given to the world.

This was before Edison had successfully determined and chosen carbonized bamboo, the only substance used for about ten years, in making filaments for commercial lamps, which was followed by the "squirted" filament employing carbonized cellulose in one form or another. Next the metallized carbon filament was used, then the pressed tungsten filament, and finally the special form of drawn tungsten wire used in modern Edison Mazda lamps.

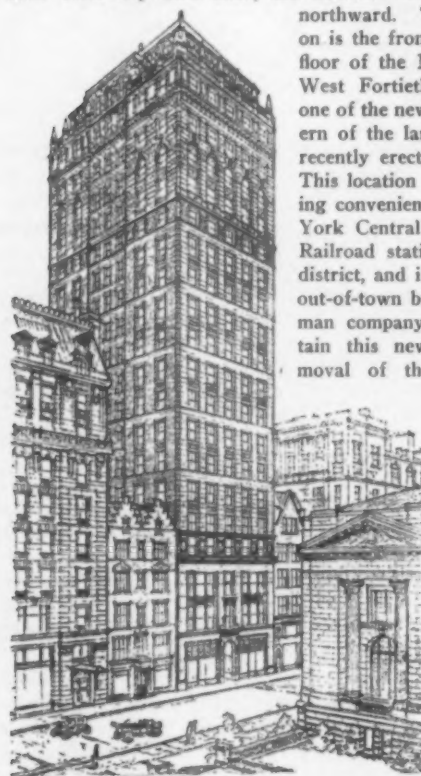
How much the rubber industry owes to Thomas A. Edison becomes instantly evident when we consider how extensively rubber is used in the electrical industry. It enters into almost innumerable forms of insulation for electric wiring, switchboards and general apparatus. As a matter of fact, without rubber it would be impossible to construct the many types of existing electrical apparatus, the many forms of transmission and control of electrical energy that are now in practical operation.



EDISON—36 YEARS AGO.

THE HODGMAN NEW YORK OFFICE TO MOVE UPTOWN.

The Hodgman Rubber Co., in selecting a location for its new New York City sales office, has followed the march of business northward. The place decided on is the front part of the third floor of the Munsey building, 8 West Fortieth street, which is one of the newest and most modern of the large office buildings recently erected in that section. This location is very central, being convenient both to the New York Central and Pennsylvania Railroad stations and the hotel district, and is easy of access to out-of-town buyers. The Hodgman company intends to maintain this new office—after removal of the main office to Tuckahoe, New York—as a sales office only, but through direct wire connection with the factory and an auto truck service, deliveries to the New York local trade will be promptly made, and direct freight and express shipments to other parts of the country



will reach their destination without any appreciable loss of time. The removal to these new quarters will be made soon after the first of the new year.

NEW INCORPORATIONS, WITH AUTHORIZED CAPITAL, ETC., 1915.

Armstrong Rubber Co., Inc., The, October 6 (New York), \$200,000. George F. Armstrong, 40 East Newell avenue, Rutherford, New Jersey; Socrates X. Newman, 172 Clay avenue, Rochester, New York; Sadie Mallagh, 60 St. Nicholas avenue, New York City. To manufacture tires and rubber goods of all kinds.

Auto Tire & Equipment Co., The, October 1 (South Carolina), \$5,000. W. K. McDowell, J. H. Young, W. Burgeson, Charleston, South Carolina. To deal in automobile accessories, etc.

Beacon Falls Rubber Shoe Co., September 25 (Massachusetts), \$1,850,000. Louis Bacon, George B. Harris, 111 Devonshire street; Daniel E. Gray, 241 Congress street, Boston, Massachusetts. To manufacture and deal in rubber goods.

Dirigo Rubber & Manufacturing Co., October 1 (Maine), \$50,000. Ernest C. Wallace, president; E. A. Willard, treasurer, and William H. Murray, clerk. Office, 415 Congress street, Portland, Maine. All kinds of manufacture.

Durable Rubber Co., Inc., October 4 (New York), \$4,000. David Auster, 895 East 172d street, Bronx; Moses Redler, 1570 Madison avenue, New York City, and Charles Baron, 9 Warren street, Newark, New Jersey. To manufacture rubber goods.

General Rubber Manufacturing Co., September 29 (Ohio), \$200,000. M. O'Neil, Patience J. O'Neil, P. F. O'Neil and

Lucy A. Mahar. To manufacture and deal in rubber products.

Gregory Rubber Co., The, October 18 (Ohio), \$25,000. Clyde F. Beery, T. M. Gregory, T. M. Gregory, Jr., Leona Gregory, and Winifred Gregory. To manufacture rubber novelties.

Independent Rubber Works, Inc., September 29 (New York), \$1,200. Samuel Gordon, 452 Kosciuszko street; Morris Solomon, 2002 Douglas street; Jesse Germansky, 198 New Jersey avenue, Brooklyn, New York. Auto tires.

Marion Tire & Rubber Co., The, October 19 (Ohio), \$250,000. D. M. Mason, M. B. Mason, Robert G. Berlekemp, W. E. Sexton and O. M. Mason. Office, Cleveland, Ohio. To manufacture auto tires and rubber supplies.

New Castle Rubber Co., of Illinois, October 6 (Illinois), \$10,000. Directors: L. W. Hottel, H. M. DeSilva and J. S. Wilson. Office, 2724 Michigan avenue, Chicago, Illinois. To deal in rubber goods.

Pearce-Arrow Tire & Rubber Manufacturing Co., October 1 (Delaware), \$500,000. F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin and S. C. Seymour, Camden, New Jersey. Office, Guarantee & Trust Co., Ford Building, Wilmington, Delaware. To manufacture and deal in automobiles and tires.

Peters Company, Inc., October 5 (New York), \$20,000. Henry Trenchard, Jr., Harry E. Trenchard, 252 Ocean Parkway, and Louis J. Peters, 664 10th street, Brooklyn, New York. To manufacture gummed products and materials.

Petters, Inc., O. H., October 6 (New York), \$3,000. John W. Suling, 107 West 111th street; Walter E. Wenzel, 122 Fulton street; Levina Leitch, 226 West 123d street, New York City. Rubber stamps.

Porter Rubber Co., September 13 (Ohio), \$125,000. Joseph C. Porter, A. H. Boyd, W. F. Church, C. F. Smith and L. P. Metzgar. To manufacture and deal in rubber products.

Scott Pneumatic Action Co., Inc., The, October 6 (New York), \$10,000. Ray W. Scott, Harmon, New York; William F. Braun, 16 Sherman place, Jersey City, New Jersey, and George Becker, 934 Jackson avenue, New York City. To manufacture player piano actions, etc.

Sebring Tire & Rubber Co., The, September 15 (Ohio), \$200,000. John Hotchkiss, William F. Smith, C. B. Smith, H. D. Weaver and W. B. Stevenson. To manufacture and deal in mechanical rubber goods, etc.

Self Vulcanizing Rubber Co., September 8 (New Jersey), \$25,000. Albert Keedwell, Dodd street, East Orange; Adrian Tichenor, Raymond street; Josiah Decker, Montclair, New Jersey. To manufacture and deal in self-vulcanizing rubber.

Twin City Cord Tire Co., The, September 16 (Minnesota), \$50,000. Charles A. Ennis, Maurice A. Hessian and C. L. Archer. To manufacture automobile tires.

THE BEACON FALLS COMPANY INCORPORATES IN MASSACHUSETTS.

The Beacon Falls Rubber Shoe Co. took out incorporation papers in Massachusetts, September 25, with an authorized capital stock of \$1,650,000; \$650,000 being 7 per cent. preferred stock, and \$1,000,000 being common stock. The incorporators are Louis Bacon, George B. Harris and Daniel E. Gray. The officers of the company are identical with the officers of the old Beacon Falls Rubber Shoe Co., of Connecticut, viz.: Tracy S. Lewis, president and treasurer; A. H. Dayton, vice-president; R. L. Fisher, assistant treasurer, and Lewis C. Warner, secretary.

A Boston brokerage house has been offering the company's preferred stock at 105 and accrued dividend, at which figure the yield is a little over 6½ per cent.

THE WESTINGHOUSE AIR BRAKE MEETING.

The annual meeting of stockholders of the Westinghouse Air Brake Co. was held at Wilmerding, Pennsylvania, October 21. Condensed statements covering the fiscal year ending July 31, 1915, and a general report by the president, H. H. Westinghouse, were submitted. A dividend of \$2.00 per share was declared, payable October 30 to stockholders of record October 9.

INSULATED WIRE SHIPPED DIRECT TO NORWAY.

Evidently some manufacturers of insulated wire have taken the attitude that this product did not come under the interpretation of the term "rubber manufacturers" as used in the guarantee given by American rubber manufacturers to the British Government, under which they agree not to ship rubber goods to neutral countries except by way of London. A shipment of 7 cases and 18 bundles of insulated wire was made by a New York shipping company on the "Bergensfjord," sailing October 16, direct to Norwegian ports. On October 23 the secretary of the Rubber Club sent a circular letter to the insulated wire and cable manufacturers of the country, calling their attention to this shipment, of which he had been notified by the British consul general of New York. The letter concludes with the following paragraph:

"Under the present conditions it is most necessary that all manufacturers of rubber-covered wire goods inform their customers regarding the terms of the British Rubber Guarantee relating to export shipments, and in order to protect their own interests it would seem advisable to have a thorough understanding with firms who have made such export shipments in respect to any further purchases which they may make. The British Government at present is exercising special diligence regarding rubber-covered wire."

A NEW DIRECTORY OF THE RUBBER TRADE.

At the rate at which the rubber trade of the United States has grown during the last few years it is inevitable that any directory purporting to give an accurate census of this industry should be soon outgrown. That is what happened to the directory of the rubber trade which was published by THE INDIA RUBBER WORLD in 1906. Inside of five years it was quite inadequate properly to represent the trade. Accordingly, in 1912 this office published a new directory, this time including not only the rubber trade of the United States and Canada, but of the whole world.

This, in turn, no longer adequately covers the rubber field of today. Consequently we are engaged in the preparation of a new rubber trade directory which will appear some time in January next. As it is impossible under present conditions to get any accurate idea of the rubber trade of Europe and as, necessarily, the European situation after the war will differ materially from conditions prior to the war, it was inevitable that Europe should be omitted from this compilation. The new 1916 directory, therefore, will be confined to the rubber trade of the United States and Canada. It will contain a list of the rubber manufacturers of these two countries, arranged under three different classifications. The first arrangement will be alphabetical, irrespective of location. In this list the officers of all the different corporations mentioned will be given. The second arrangement will be geographical, first under an alphabetical arrangement of states and then of the towns in each state. The third arrangement will be an alphabetical one, according to the type of goods manufactured.

In addition, there will be lists of crude rubber importers and brokers, rubber reclaimers, rubber stores and supply men for the rubber trade, including those who sell fabrics, compounding ingredients and rubber machinery.

The department devoted to trade marks and trade names, which has been a valuable feature of the two former directories, will be revised, enlarged and corrected to the present time, and will be even more complete in this book than in either of its predecessors. It will be the best directory of the trade yet published.

THE MECHANICAL RUBBER GOODS DIVISION DINNER.

The Mechanical Rubber Goods Division of The Rubber Club of America, Inc., will have a dinner, November 3, at 6:30 p. m. at the Union League Club, New York.

THE ANNUAL MEETING OF THE NEW YORK RUBBER TRADE ASSOCIATION.

The annual meeting of the Rubber Trade Association of New York will be held in the Association's rooms at 82 Beaver street, New York, November 4, at 3 p. m.

WESTINGHOUSE ELECTRIC INCREASES WAGES.

The Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pennsylvania, has granted its shop employees an average 8-hour and 40-minute day instead of the average 9-hour day, or a 52-hour week instead of a 54-hour week, and they will have the same weekly wage for 52 hours now obtained for 54 hours. A bonus of 6 per cent. on the earned wages is also to be paid in progressive quarterly installments, which will give the employees a yearly increase of about 10 per cent. in wages. The new work hours and bonus payments began October 1.

A savings fund has been established to encourage thrift among the employees, the company acting as trustee and guaranteeing the deposits and 4½ per cent. interest.

MR. AYLSWORTH THE INVENTOR OF CONDENSITE.

To the Editor of THE INDIA RUBBER WORLD:

In your issue of October 1, Dr. L. H. Backeland is mentioned as the inventor of Condensite. This is an error. The inventor is J. W. Aylsworth, who for more than a quarter of a century has been closely associated with Thomas A. Edison, as his chief consulting chemist.

Condensite was developed in the course of a search for a better material to be used in the manufacture of phonograph records, and the Edison Diamond Disc record is the result. Condensite is the only phenolic condensation product that has ever been successfully used in the making of a record, which is probably the most difficult plastic moulded article to manufacture without imperfections.

Condensite is unlike any other phenolic condensation product, because of the unique method by which it is made, and which, of course, is thoroughly described in the Aylsworth patents. By this process the product, during the reaction between the chemicals of which it is composed, is heated to such a degree as to disassociate all the water, a process which if employed in the manufacture of any of the forms of phenolic condensation products described in the art prior to the Aylsworth patents, would render them useless.

This absence of water even in minute quantities, gives to the final product a capacity for taking extremely minute impressions in moulding, as well as imparting to them unusual electrical and other qualities of value.

The next step in the manufacture of Condensite very much resembles that of rubber manufacture. It is compounded with a chemical that reacts upon it when heated, and hardens the product, just as sulphur or other vulcanizing mediums harden rubber when similarly treated, and the process of molding is very much the same as in rubber manufacture.

Your mention of Condensite also refers to it as a substitute for rubber. This is true only in a very small degree; it has in some instances been used in the place of rubber, but its development, so far, has chiefly been in competition with other substances, and with respect to rubber, we should say that Condensite rather supplements than substitutes it. Each possesses valuable properties not found in the other.

CONDENSITE COMPANY OF AMERICA,
Kirk Brown, President.

October 21, 1915.

ANNUAL REPORT OF THE INTERCONTINENTAL RUBBER CO.

IN the annual report of the Intercontinental Rubber Co., issued October 4, and covering the year ending July 31, 1915, the secretary states that although conditions in Mexico have not improved during the past year, still it was possible to operate the company's factory at part capacity. The difficulties, however, were great and were much increased by the totally inadequate railway service. Though the prices for rubber prevailing during the year were low, the company's operations show a profit.

The balance sheet, which is reproduced in full below, shows net profits for the last fiscal year of over \$240,000, as compared with a little less than \$51,000 for the preceding year; and the surplus last July was nearly \$200,000 larger than at the same time the year before.

BALANCE SHEET—JULY 31, 1915.

| ASSETS. | | |
|---|----------------|-----------------|
| Investments in stock of merged and subsidiary companies: | | |
| By cash | \$2,315,321.59 | |
| By stock issues | 28,198,575.30 | |
| | | \$30,513,896.89 |
| Patents (exclusive of subsidiary companies) | | 15,141.77 |
| Accounts and notes receivable, etc.: | | |
| Advances to subsidiary companies | \$455,194.22 | |
| Sundry accounts | 153,292.02 | |
| | | 608,486.24 |
| Investment securities (market value) | | 1,114,493.75 |
| Cash | | 239,789.07 |
| | | \$32,491,807.72 |
| LIABILITIES. | | |
| Capital stock: common | | |
| Accounts payable, taxes accrued, etc.: | | \$29,031,000.00 |
| Due to subsidiary companies | \$266,258.03 | |
| Sundry accounts | 2,806.58 | |
| | | 269,064.61 |
| Reserve accounts | | 764,665.72 |
| Surplus (as below) | | 2,427,077.39 |
| | | \$32,491,807.72 |
| SURPLUS ACCOUNT. | | |
| Surplus August 1, 1914 | | |
| Gross profit on operations | \$180,140.24 | |
| Net income from securities, interest, etc. (after adjustment of investment securities to current market value) | 94,280.90 | |
| | \$274,421.14 | |
| Less administration and general expenses | 34,184.70 | |
| | | 240,236.44 |
| | | \$2,436,077.39 |
| Charges against surplus: | | |
| Reserve against loans to subsidiary companies | \$9,000.00 | |
| | | 9,000.00 |
| Surplus July 31, 1915 | | \$2,427,077.39 |

H. G. ARMSTRONG JOINS THE MUEHLSTEIN FORCES.

H. Muehlstein & Co., dealers in scrap rubber, whose headquarters are in New York, but who also have offices in Akron and Chicago, have decided, in order to cover the whole field and take in New England, to open a branch office in Boston, and they have selected H. G. Armstrong to take charge of this office and act as their eastern representative. Mr. Armstrong is widely known in the rubber trade, as he has been connected with it for something over 15 years. For ten years he was with the United States Rubber Co. in various important positions, acting at different times as their agent in Baltimore and Chicago, and later being connected with the main selling department in New York; and in these various capacities he made a very extensive circle of acquaintances, both east and west.

The books on business efficiency always devote a few chapters to "The Value of a Pleasing Personality," as if that were something the unfortunate who did not possess it could acquire by reading books. A pleasing personality is a gift of the gods, and is not to be had in any other way. Now, Mr. Armstrong has it, and for that reason the Muehlstein company is fortunate in securing him to represent it in the New England field, particularly as he knows Boston very well, and is very well known in Boston.

TRADE NEWS NOTES

The Electric Hose & Rubber Co., of Wilmington, Delaware, is extending its plant by the addition of a large one-story warehouse of brick and concrete, 248 feet long and 31 feet wide.

The General Electric Co., Schenectady, New York, has begun the construction of a one-story furnace building, 60 x 178 feet, which will cost \$16,000.

The Allen Machine Co., Erie, Pennsylvania, have reported a recent sale to the Dunlop Tire Co., Limited, Manchester, England, of six 8-inch electrically driven tubing machines. Two were double machines and four were single.

Standard Woven Fabric Co., of Framingham, Massachusetts, which manufactures multibestos products and rubber specialties, has purchased the plant of the Walpole Tire & Rubber Co. at Walpole and will take possession about December 1.

The Second Pan American Scientific Congress will meet in Washington, D. C., from December 27, 1915, to January 8, 1916. John Barrett, director general of the Pan American Union, is secretary general of the congress. There will be special representatives and speakers connected with various educational and scientific bodies throughout the 21 American republics.

The capital stock of the Southwark Foundry & Machine Co., Philadelphia, has been increased from \$500,000 to \$1,300,000.

In an exciting game on the Passaic, New Jersey club field, Saturday, October 9, the New York Belting & Packing Co. won the factory baseball championship, defeating the United Piece Dye Works nine by the score of 4-0.

Oscar Cutler, formerly of Cutler, Spack & Co., scrap rubber dealers, Chelsea, Massachusetts, has dissolved partnership and established new offices at 98 Second street, Chelsea, as Oscar Cutler & Co.

Jacob L. Caplan, formerly of Caplan & Sall, Philadelphia, has dissolved partnership and is now conducting a general waste material business at the same address under the firm name of Jacob L. Caplan Co.

The gross sales of the Converse Rubber Shoe Co. for the nine months ending September 30, amounted to \$974,821, compared with \$806,942 for the same period of 1914. Net profits were \$131,750 this year, compared with \$83,542 last year, a gain of 58 per cent.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on October 25 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

| | Bid. | Asked. |
|---|------|--------|
| Ajax-Grieb Rubber Co., common | 300 | .. |
| Ajax-Grieb Rubber Co., preferred | 101 | .. |
| Firestone Tire & Rubber Co., common | 800 | 810 |
| Firestone Tire & Rubber Co., preferred | 112 | .. |
| The B. F. Goodrich Co., common | 76 | 78 |
| The B. F. Goodrich Co., preferred | 110 | 112 |
| Goodyear Tire & Rubber Co., common | 333 | 337 |
| Goodyear Tire & Rubber Co., preferred | 109½ | 110½ |
| Kelly-Springfield Tire Co., common | 275 | 280 |
| Kelly-Springfield Tire Co., 1st preferred | 92 | 92½ |
| Kelly-Springfield Tire Co., 2nd preferred | 225 | 235 |
| Miller Rubber Co., common | 240 | 250 |
| Miller Rubber Co., preferred | 109 | 110 |
| Portage Rubber Co., common | 59½ | 62 |
| Portage Rubber Co., preferred | 94 | 95 |
| Rubber Goods Manufacturing Co., preferred | .. | .. |
| Swinehart Tire & Rubber Co. | 91 | 93 |
| United States Rubber Co., common | 54 | 56 |
| United States Rubber Co., preferred | 105 | 107 |

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, \$6.

THE OBITUARY RECORD.

GEORGE F. DAVENPORT.

GEORGE F. DAVENPORT, a salesman in the employ of the Boston Belting Co. for nearly 26 years, died suddenly from heart failure at his home in Ashmont, October 19. Mr. Davenport was born November 22, 1852. He was well-known in the paper industry, as he had sold the products of his company to paper mills located in New England for more than 25 years, and he had many loyal friends. Funeral services were held at his residence, 32 Roslin street, Dorchester, Massachusetts, Thursday, October 21. The interment took place in Belgrade, Maine.

JOHN LOYD.

John Loyd, head of the machinery manufacturing house of John Loyd & Co., died at his home in Brooklyn, October 5. He was born in Newton, Massachusetts, in 1835. He entered the United States Navy at the time of the Civil War as an assistant engineer and was assigned to various important duties connected with the Federal men-of-war. He resigned from the navy in 1867, went to New York, and established a general machinery business which was carried on for a number of years under the name of McLaughlin, Grover & Loyd, but after the death of his partners became John Loyd & Co. He was one of the first, if not the very first, of the machine manufacturers in the United States to build elastic band cutters for rubber mills. He also constructed various other special machines for use in rubber manufacture.

WARREN M. HILL.

Warren M. Hill, treasurer of the National Tack Co., and at one time identified with rubber manufacture, died suddenly of heart disease at his home in Boston, October 26, in his 53d year. While for many years past Mr. Hill had been associated with the Tack company and with banking interests in Boston, and had not been identified with rubber interests, 25 years ago he was president of the Standard Rubber Co., of Brockton, Massachusetts. In 1892 this company changed its name to the Standard Rubber Corporation, and in 1905 the plant was bought by a leather manufacturer and went out of existence as a rubber factory.

RUBBER TRADE INQUIRIES.

[126.] A subscriber wishes to know the name and address of a maker of porcelain forms for dipped goods.

[127.] An inquiry has been received for the name of a manufacturer of dipping machines.

[128.] A company desires to purchase a second-hand rubber mixing mill with rolls from 24 to 36 inches in length.

[129.] An inquirer wishes to know if there is a machine made for imprinting a trade mark on each yard of rubberized sheeting, along the selvage.

[130.] A Panama shipper desires to secure an automatic appliance for severing blocks of balata.

[131.] A London firm would like to correspond with manufacturers of toys and games.

[132.] A Western correspondent desires names of manufacturers of dental gum.

[133.] The name of a manufacturer of imported woolen fabrics for rubberizing is requested.

[134.] An inquiry has been received for manufacturers of Egyptian cotton cloth fabric for use in filter presses.

[135.] A merchant in England is desirous of obtaining white canvas boots and shoes with rubber soles, from half a dollar up.

[136.] A foreign correspondent would like to correspond with a manufacturer of benzol.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A commission agent in the United Kingdom desires to represent manufacturers of dress shields and other miscellaneous articles. Report No. 18,631.

An American consular officer in Brazil reports that a man is in the market for chloride of sulphur, sulphide of carbon, benzine, lithopone and pentasulphide of antimony. Report No. 18,638.

A firm in Sweden wishes to purchase about 200 pounds of black tubing, 30 pounds of red tubing, air cushions, hot water bottles and other surgical supplies. Report No. 18,674.

A man in Italy wishes to represent a firm manufacturing hard rubber articles, such as syringes, thermometers, atomizers and rubber bulbs. Report No. 18,691.

A company in India wishes to be placed in communication with American manufacturers and exporters of rubber surgical and medical goods. Report No. 18,704.

A firm in Argentina desires to receive catalogs, samples, etc., of American-made cloth for raincoats, bathing suits and caps, and rubber tubes. Report No. 18,715.

A firm in India desires catalogs, price lists, etc., of rubber tires for horse carriages. Report No. 18,722.

A general agent in the Netherlands wishes to secure the sole agency for American manufacturers of elastic goods. Report No. 18,759.

A business firm in Argentina desires to secure the agency for American manufacturers of automobile tires and accessories. Report No. 18,768.

A Swiss firm would like to establish business relations with American manufacturers of rubber bands for use in making tin cans air-tight. Report No. 18,781.

A man in Greece desires quotations on insulated switchboard cable for telephone apparatus and single insulated wire. Report No. 18,807.

A man in Denmark wishes to purchase American-made oil-cloth, rubber shoes and waterproof clothing. Report No. 18,836.

A trading corporation in the Netherlands, selling goods in the Dutch East Indies, desires to communicate with American manufacturers of rubber and other goods. Report No. 18,845.

A Russian manufacturer desires to establish business relations with American manufacturers or exporters of material and equipment required for the manufacture of rubber stamps and engraving work. Report No. 18,855.

IN THE MARKET FOR FIRE HOSE.

The fire commissioners of San Jose, California, will purchase 3,000 feet of 2½-inch hose and 2,000 feet of 1½-inch hose, to be delivered December 1.

The Good Will Fire Co., of New Castle, Delaware, is asking for samples and prices on 300 feet of hose.

The Union Fire District of South Kingstown, Rhode Island, has voted to purchase a motor combination chemical and hose wagon, equipped with 3,500 feet of chemical hose and 1,000 feet of regulation hose.

PROPOSED GOVERNMENT PURCHASES.

The Bureau of Supplies and Accounts, Washington, is inviting bids, to be opened November 9, on Navy Department supplies as follows: 7,200 feet rubber fire hose, 45 feet suction hose—schedule No. 8887; 4,000 feet rubber air hose—schedule No. 8911; 2,000 feet rubber wash deck hose—schedule No. 8918; 335 pounds hard rubber, in sheets—schedule No. 8925. To be opened November 23; 1,500 rubber packings—schedule No. 8943. To be opened November 30: sheet, rubber, cloth and insertion wire packing—schedule No. 8941.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

IN several branches of the rubber business there is increased activity, which in part makes up for the quiet times of last season and the early fall. The clothing trade is booming, and the manufacturers of the standard and finer lines are so rushed with orders that extra hours or larger forces are necessary. The makers of coated fabrics are running their factories double time. The footwear trade was busy during September, but tapered off during October, and at present writing manufacturers and wholesalers are waiting for the rush which must inevitably come when the first heavy storm of late fall arrives.

Garden hose business is flat. There have been but small sales at retail, as the entire summer was a wet one. Retailers did not send in any repeat orders, and have carried over sufficient stocks to warrant a refusal to order any goods for spring delivery. In fire hose, specifications have been drawn so fine and competition is so fierce that this trade is unsatisfactory. The rubber belting business is in a hopeful mood, for leather belting has so increased in cost as to almost prohibit its use. Manufacturers of leather belting are now obliged to pay 75 cents a pound, more than double its normal cost. Were it not for the various rope drives and other power-transferring mediums, rubber belting should have a boom, and perhaps it may, later.

There are somewhat conflicting reports of the tire business. Naturally business falls off at this season, for many who motor in summer store their cars along about this time, and buy no more tires till spring. But if the retail business is falling off, wholesale trade in some factories is encouraging, for some good future delivery contracts are reported closed, which will keep certain mills busy for a large part of the time between now and early spring. A growing branch of rubber manufacture is that of rubber soles for shoes, and those factories engaged in this line. Druggists' sundries are in moderate call.

The demands on its factory space have necessitated the addition of another building to the plant of the Apsley Rubber Co., at Hudson. This will be a brick structure, four stories high, 40 feet wide and 120 feet long. It will be used, on completion, for storage purposes, thus allowing additional machinery to be installed in the main factory and thereby enlarging its regular output. The company completed its new heater building in September, and will make some other important changes, in order to keep pace with the increased demand for its clothing and footwear.

An interview with Mr. Apsley lays at rest some rather persistent rumors that he intended to sell out, this being most positively denied. He says that the company is doing the largest business in its history, each week showing a larger force and an increased pay-roll. Mr. Apsley is just as active and ambitious as when he started his little factory in Hudson over thirty years ago, and to talk with him one is inclined to believe he will continue a prominent factor in the rubber trade for another thirty years.

The factory erected for the Patterson Rubber Co. at Lowell, which was put up at auction some months ago, and bought in by Francis H. Appleton of this city to secure his claim against the Paterson company, has been sold to Ralph B. Phillips, manager of the American Steam Gauge Co., who has formed the R. B. Phillips Manufacturing Co., and is manufacturing shells there on a contract for the British Government.

Press statements to the effect that the Plymouth Rubber Co. sold 500,000 yards of rubberized blankets to one of the allied governments and was considering doubling the capacity of their plant to fill a new order for 3,000,000 yards, have been emphatically denied by Mr. Stone, treasurer of the company. The plant

is running day and night, but entirely on domestic business. To quote Mr. Stone: "The company believes in supplying its own customers first, regardless of attractive prices quoted on temporary business."

Creditors of the Walpole Tire & Rubber Co., of Walpole, have been allowed a seventh dividend amounting to 35 per cent. by decision of Judge Dodge in the United States district court. This brings the total dividend disbursements to 85 per cent.

The Goodyear Tire & Rubber Co. has had on exhibition in its window at the Boston branch some very attractive displays the last month. First was displayed a miniature representation of a South American jungle, showing the rubber trees being tapped, and the latex coagulated and smoked, little dolls well simulating Indians being shown. There were also specimens of the different varieties of crude rubber, each properly labeled. There was also a portrait of Charles Goodyear. The exhibit was visited by a number of delegations of school children and their teachers, who felt the educational importance of such an exhibit.

Last week's display was based upon the premise, "If Charles Goodyear could return," and shows how important has grown the industry based upon Goodyear's discovery. The window was filled with articles made in the Goodyear factory in Akron, appropriately labeled, among them many varieties of tires for automobiles, motorcycles, bicycles, trucks and carriages; also a large line of hose, belting, packing and mechanical goods. The jungle scene was still retained, and made a fitting background for this display.

At the Suffrage parade in this city, October 16, toy balloons were much in evidence—the Suffragists and "antis" both using these attractive toys to display the colors of their party.

Hon. L. D. Apsley, of the Apsley Rubber Co., Hudson, gave an interesting talk at the monthly meeting and dinner of the New England Shoe Wholesalers' Association on October 13.

A. L. Belcher, who for several years has represented the Revere Rubber Co. in Europe, with offices in London, was in this city several days last month, devoting most of his time to consultation with the officers of the company, inspecting the factory and planning for future business. He has sole charge of the mechanical goods sales across the water, which under his able management have grown steadily during the last ten or a dozen years.

George F. Davenport, whose death on October 19 is mentioned on the obituary page of this issue, was a member of the family of that name prominent in Roxbury. Previous to his connection with the Boston Belting Co. he was a salesman for Samuel Kidder, the mill supply house of Boston. He went to the Boston Belting Co. twenty-six years ago, and at once specialized in paper-mill supplies, building up an extensive trade. He was a man of genial qualities, loyal to his house, popular with his customers, combining a keen trade insight and strict integrity with unbounded good-fellowship.

Chester J. Pike, Jr., of the United States Rubber Co., of New England, is the subject of considerable chaffing by his fellow-workers. He made somewhat elaborate preparations for his hunting trip in the wilds of Maine, and his total was one partridge and one hedgehog.

James E. Odell, the popular Boston rubber broker, takes his vacation in sections, a few days at a time. His custom is to tour some attractive route in his automobile, his longest trip being one of six days through the White Mountain region of New Hampshire.

Robert C. Harlow, of Plymouth, president of the Monaquet Rubber Co., of South Braintree, went to Richmond with the Ancient and Honorable Artillery on the occasion of its recent visit to that city.

* * *

Harry Arnold, assistant superintendent of the Converse Rubber Co., Malden, started a few days ago on his annual hunting trip to the Rangeley Lake region, with a full camping outfit, and all the ammunition necessary to deplete the forests of game.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE Essex Rubber Co. inaugurated this week one of the broadest and most liberal policies in the interest of its employees that have ever been adopted by a manufacturing plant, in this section of the country, at least. It is a plan under which the company will pay every employee to go to night school and improve himself or herself by acquiring a better education.

Some companies have gone to considerable expense to encourage their employees to acquire education in special lines which would fit them to be better workmen in the particular vocation they chanced to be following. The Essex company plan, however, does not limit the list of studies. Many of the young women employees are, for instance, learning dressmaking. Many of the young men are selecting branches totally distinct from the rubber business. Certainly no selfish motive can be imputed to the company, since it is willing to help educate a youth to become a technical man in an altogether different line of business.

Each employee taking advantage of the company's liberality will find in his pay envelope each month a sum of money to be known as "the educational premium." This sum of money will equal the hourly wage earned by the employee for half the time spent by him at any evening class or classes. For the proper carrying out of the plan the company has arranged with the Board of Education, the School of Industrial Arts, the Y. M. C. A. evening schools and the Y. W. C. A. evening classes. Some of the classes are especially for those who cannot talk English. A number of foreigners employed at the plant are taking advantage of this unusual opportunity to learn more about the ways of the land of their adoption. This feature alone, particularly at this time, when so much stress is being placed upon this question, has brought forth hearty commendation from officials of all ranks. Leading teachers and others interested in educational work are closely watching the progress of the plan and without exception they are highly enthusiastic over it.

* * *

Several Trenton factories have experienced labor trouble in the unskilled branches of late. Two rubber concerns are among the number. They are the Globe Rubber Co. and the Essex Rubber Co. At these plants the places of the disgruntled men have been taken by other workmen, and in the trimming department at the Essex plant, where some of the girls left their work, their places were satisfactorily though temporarily filled by the wives of the company officials and factory foremen.

* * *

Peter Chevalier, of France, has returned home after spending several weeks in the plant of the John E. Thropp's Sons Co., where he studied the mechanism of the tire-making machines produced by the company. Mr. Chevalier will act as the French agent of the Thropp company, and several tire-making machines have already been sent to France. They will replace the machines of German make heretofore used in the French shops, the American machine doing quicker and better work and requiring fewer hands to operate it.

Jacob L. Newman, of Newark, has been appointed receiver

for Leon Jaffess, a motor tire dealer of Plainfield, with offices also at Harrison, New York City, Detroit and Cleveland.

At the Trenton Fair held recently the exhibit of orchids made by Charles E. Roebling, president of the John A. Roebling's Sons Co., was one of the finest ever seen at an exposition. Mr. Roebling is one of the leading amateur orchid collectors in this country.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE various rubber factories throughout the State are reported to be working to their full capacity, and it is expected that they will continue to operate under similar conditions for an indefinite period. Never in the history of the rubber industry of Rhode Island has there been such a general activity, or such encouraging prospects. Rubber goods necessary to the surgeons of the armies in Europe are in increasing demand and immense quantities are being continually shipped. The factories that are working on automobile tires are rushed to fill their orders, while the boot and shoe factories are turning out unusually large quantities of footwear.

* * *

The plant of the Revere Rubber Co., on Valley street, this city, is at present being operated three evenings a week, and the indications are that night, as well as steady day work, will be the order for some time to come. The company is erecting a one-story brick and concrete building as an addition to its facilities, which will be used for storage purposes. It has recently completed a new one-story reinforced concrete laboratory building, which will take rank with anything of its kind in this section of the country, both in its appointments and equipment. It is 41 x 104 feet, with brick tunnels and tile partitions, built to carry two more stories, whenever necessity demands. The building includes three office rooms, a cold storage room, physical testing room, mill room, vulcanizer and press room, and a chemical laboratory.

* * *

In planning for the new storehouse for the National India Rubber Co. at Bristol, the location selected is said to be the best that could be obtained for facilities in handling the manufactured goods of the corporation. A spur-track runs from the New York, New Haven & Hartford Railroad yards to the new storehouse so that freight cars can be taken into or beside the storehouse, which adjoins the railroad yards.

Extensive repairs have just been completed at the pumping station of the National India Rubber Co. and at the DeWolf Inn, which is used by the National company for the housing of nearly 200 of its female employees.

The National company pays the largest tax of any corporation or manufacturing company in the town of Bristol, where its plant is located. The amount this year is \$8,025 on an assessed valuation of \$585,750.

The wire department of the National company is increasing its product, and running overtime to keep pace with the orders.

A full force of help is now engaged steadily at the National mills, where over 2,800 people are employed, with promise of full time for an indefinite period.

* * *

The Tubular Woven Fabric Co., of Pawtucket, is rushed with orders for fall and winter shipment, and several of its departments are working three nights a week until 9 o'clock to turn out the requisite amount of work. The company is making a new water and oil-proof hose, which is designed for use on automobiles, and it is reported to have closed contracts with several of the largest automobile manufacturers in the country for early shipments of considerable magnitude.

* * *

The Narragansett Rubber Co., located on Wood street, Bristol, has recently made numerous alterations at the plant to secure additional room and to facilitate operations, and a considerable

addition is being constructed for storage and other purposes. There is a possibility that in the spring several new buildings will be erected, with material additions to the present structures. Since the reorganization of the concern there has been a steadily increasing business.

Stockholders, creditors and others interested in the settlement of the affairs of the suspended Atlantic National Bank of this city were greatly pleased with the announcement early in the month that Judge Dodge, in the United States District Court, had allowed a seventh dividend amounting to 35 per cent. to all the creditors of the Walpole Tire and Rubber Co. This brings the total disbursements to date to 85 per cent. of the claims. The Atlantic National Bank was one of the largest creditors of the Walpole company and its suspension was a material factor in forcing the Walpole company into financial difficulties.

The McNaul Tire Co. has removed from 344 Weybosset street to the new Franklin building, 50 Franklin street.

The calendering department of the International Rubber Co.'s plant at West Barrington is being operated night and day, while other departments are being run on an overtime schedule.

Considerable attention has recently been attracted by the arrival of four cases of imported statuary for the estate of Colonel Samuel P. Colt, president of the United States Rubber Co., at Bristol, which were received through the local custom house. They were modeled by the master hand of Rodin and were purchased in Paris several months ago by Colonel Colt, and the four pieces are said to have cost about \$50,000. One of them, it is said, has long been sought by the Metropolitan Museum of Art in New York.

The pieces of statuary, as named by the sculptor, are "Le Lion Dououreux," "Eve," "Psyché" and "L'Epervier et la Colombe." The purchase of the statue of "Eve" was consummated some time ago, but Colonel Colt also desired to obtain possession of the

Beatty will be assistant to Manager L. C. Rockhill of the auto tire department and will have a much broader field. The change was announced on the return of Mr. Beatty from the recent big conference of branch managers and representatives at the home office at Akron. Mr. Beatty will be succeeded here by Edward J. Smith, who comes to Providence from the Hartford, Connecticut, branch, where he has been for the last three and a half years.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

BANKERS in close touch with the manufacturing interests in Akron predict general prosperity and an unusually successful year for the rubber factories—the customary "slack season" early in the fall and winter now proving a mythical term. Large additions to the Goodrich, Firestone, Kelly-Springfield, Miller and Goodyear plants are being built, and it is confidently expected that all of these factories will run at full capacity throughout the winter, with additional workers totaling 2,000.

Rubber stocks are active; the possibility of a 4 or 5 per cent. dividend on Goodrich in January and of 1916 dividends on Firestone common stock of 20 per cent. being favorable influences in the trading. It might be added that the Goodrich officials give no intimation as to what action they may take.

Akron rubber factories are supporting a bill which has been introduced in Congress to allow manufacturers to establish retail prices below which dealers could not sell. Rubber plants claim that price-cutting is unfair competition and only used as a bait to attract the public to the purchase of other articles at higher prices, and they have petitioned dealers in their products to urge congressmen from their districts to vote for the bill.

The annual sales convention of the Firestone Tire & Rubber Co., ending September 30, was the most successful convention ever held by the company, the attendance being



FIRESTONE SALES CONVENTION,

three other marbles, but was unable to do so because of the sculptor's attachment for them.

Rodin desired to keep the statues himself, as he intended to add them to his own private collection in Paris. It was only after the Germans made their drive upon the French capital that he became fearful for the fate of his creations, and finally acquiesced in Colonel Colt's wish to purchase them.

Samuel M. Beatty, for the past two years manager of the local branch of the Goodyear Tire & Rubber Co., has been promoted to factory representative in the sales promotion department, with headquarters at the factory at Akron. In his new position Mr.

larger and the interest greater, with results correspondingly valuable. There was a total attendance of 500 men, every state in the Union and six foreign countries being represented.

For three days branch managers and salesmen from the many branches of this organization broadened their knowledge of business conditions in general and the tire business in particular by attendance at conferences where the theoretical side of the business was fully and ably discussed by company executives, branch managers and salesmen; the subjects including carriage, motorcycle, bicycle, motor and pneumatic tires; accessories, rims, exports, adjustments, credits, advertising and factory and branch efficiency. Each

man also studied the detailed construction and manufacture of Firestone tires in the factory itself.

An inspiring sight was the home plant in Akron, with five large additions in process of construction. Seven acres of additional floor space will be provided by these enlargements, allowing for an output of 12,000 pneumatic tires per day.

Dinners and outings at the lakes around Akron, and theater parties and banquets at the local hotels, brought the men together socially.

Plans have been approved for a new Firestone employees' club building, four stories high, with a basement, which will cost \$85,000.

The B. F. Goodrich Co. has inaugurated a plan of insurance for its employees, beginning November 1, which includes an old age pension, compensation for the sick and those injured in service, and a life insurance policy ranging from \$500 to \$1,000, according to the time the employee has been working for the company.

The plan of providing these safeguards evolved from a system of physical examinations begun in 1914. The statistics gathered showed physical deficiency in the majority of workers. The sensible and beneficent conclusion upon these results was stated by E. C. Shaw, second vice-president of the Goodrich company, as follows:

"The corporation believes it to be a part of its business to protect, as far as possible, the well-being of all who have contributed to its success and it holds it to be essential to that success that every employee be able to enter upon his or her daily task in fit condition, with mind untroubled by unnecessary worry."

The Goodrich company is to have two more five-story factory buildings, one 100 x 300 feet in dimensions and the other 100 x 260 feet; both costing approximately \$400,000.

The Kelly-Springfield Tire Co. has purchased the plant of the Cataract Rubber Co. at Wooster, Ohio, with the

C. O. Baughman, secretary; R. A. May, treasurer. The regular quarterly dividend of 1½ per cent. was declared, and a probable increase of the rate early in 1916 to 7 per cent. was discussed.

The capital stock is \$800,000. The buildings, real estate and machinery are placed at \$369,000. There is a surplus of \$195,000. A large three-story addition to the factory of the company has just been completed and the erection of another addition 60 x 100 feet has been begun.

The Western Tire & Rubber Co., of Kansas City, Missouri, has purchased 12 acres in Akron, on which is being erected a building of sufficient size to accommodate its constantly increasing accessory business and to provide space for the manufacture of casings and tubes. The building will be finished November 15, and it is expected that the factory will be in full operation by December 1.

The company will be reincorporated under the laws of Ohio, with a different name, with a paid-up capital of \$200,000.

The welfare department of the Goodyear Tire & Rubber Co. has applications for 100 new homes in the community on Goodyear Heights, and hopes within a year to have 2,000 people living in that district. A new quarter-mile running track has recently been completed for the public playgrounds of the community.

The Goodyear "safety first" committee has begun a campaign to prevent accidents in the plant caused by the carelessness and over-confidence of new employees, who attempt to hurry their work to keep pace with the more experienced. "Don't try to compete with your 'buddy,'" is the slogan of the campaign. "Take your time until you have learned the job."

An addition to the plant of the Atlantic Foundry Co. in East Akron is being completed, which will double its capacity and output.



HELD AT THE FIRESTONE FACTORY.

object of immediately increasing its output to handle the rapid development of business.

The Miller Rubber Co. will soon build a new garage and salvage house, and a press room, both buildings to be one story high, with basement. The estimated cost—\$6,000 and \$4,000, respectively—is low, as the company will be its own contractor.

At the annual meeting of the Swinchart Tire & Rubber Co. on September 29 the following officers were re-elected: Thomas F. Walsh, president; E. L. Mather, vice-president;

The old M. & M. Rubber Manufacturing Company has been reorganized and incorporated under the name of The Giant Tire & Rubber Co., with a capital of \$50,000. Claude E. Hart, president of the M. & M. company, and J. F. Schaefer, secretary and treasurer, will retain their offices in the new organization, which will begin operations about the middle of November in a remodeled building on North Howard street.

The Lincoln Rubber Co. has purchased the abandoned plant of the Summit Rubber Co., of Barberton, which will be operated as a branch of the Lincoln company's Akron factory.

On October 25 about 1,500 machinists employed by Akron rubber companies and allied industries, were notified that their wages would be increased 15 per cent. The increase is made voluntarily by employers.

The bowling league of The B. F. Goodrich Co. is in full swing for the season, with H. W. Hicks as president; Victor A. Parker, vice-president; J. G. Evans, treasurer, and L. B. Kennedy, secretary.

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., has given the new Akron field artillery battery an armory site in East Akron, including a large tract for the armory, parade and maneuver grounds.

Mr. Seiberling was Akron's representative at the recent directors' meeting of the national chamber of commerce at Cleveland.

SOME RUBBER NOTES FROM CHICAGO.

By Our Regular Correspondent.

GENERAL conditions in the rubber trade of Chicago appear to have improved during the past few weeks, according to the leading men in the business here. Mechanical rubber men without exception declare themselves well satisfied with the volume of orders now being received. The heavy grain harvest in the west resulted in numerous rush orders for belting, and many elevator proprietors, who a few weeks ago were resisting the efforts of salesmen to sell them needed belting, have been writing urgent letters for goods. However, the local houses know the country elevator trade well, and were prepared to make prompt shipments on orders after the regular season, so that little distress was caused. The rubber clothing people are having a better fall than last year, owing to the fact that the wet weather started earlier this year. Indeed, they are closing a remarkable summer, during which many houses did a volume of business larger than they ever thought possible. Rubber specialty houses report a good trade, and while the holiday rush is not yet apparent, sales to drug stores and the retail trade in general are quite satisfactory.

Rubber men who are members of the Illinois Manufacturers' Association are much interested in the fight which is being made by that organization on certain features of the factory inspection laws, on the ground that they are worthless, as far as giving protection to the employees is concerned. A dinner was held last week at the Hotel La Salle at which a number of prominent manufacturers in different lines were present. A plan for correcting the objectionable features was outlined. It is claimed that some manufacturers have been forced to spend as much as \$100,000 for improvements which have not done the workmen a particle of good. The manufacturers have a suspicion that certain corporations are prospering at their expense, owing to what is alleged to be inspired factory legislation.

Great enthusiasm witnessed the departure early in the month of the western representatives of the Firestone Tire & Rubber Co. for Akron for the purpose of attending the annual convention of the company in that city. A special train was required. Only a few years ago thirty men were all that could be mustered on a similar occasion. This year at least three hundred were on hand.

The Peck Wheel Co., 4058 Princeton avenue, has been missing rubber automobile tires for some time, and it has become apparent that the firm is one of those marked by the organized band of tire thieves who have been preying on local supply houses and freight yards for a number of months. Recently several members of the band were stopped by officers as they were leav-

ing the Peck company premises with a wagon load of tires. The men leaped from the wagon and escaped amid a volley of shots.

The Central Rubber & Tire Co. is the name of a new firm which has just taken out incorporation papers at the office of the state auditor. The company is incorporated for \$150,000. The incorporators are: Clinton S. Bailey, W. J. Carter and Israel S. Berkman. The firm will make headquarters in this city.

PACIFIC COAST NOTES.

C. A. Ellison and A. H. Skinner, Jr., have formed a partnership and opened a store in Tacoma for the sale of Knight tires. Both men are well known in Tacoma business circles. Mr. Ellison was with the United States Rubber Co. for eleven years, both in the sales division and in looking after tire stocks, covering the Northwest as traveling salesman out of Tacoma and Portland. Mr. Skinner was recently connected with the Pacific Auto Supply Co., Inc., of Seattle, in which he still retains a financial interest.

The Stowe Rubber Co., of Los Angeles, filed a certificate of incorporation under the laws of California on September 24, with a capital stock of \$20,000. The Company will deal in automobile supplies and accessories; all kinds of rubber and fabric goods, etc. The directors are: William J. Stowe, Ada F. Stowe, and Perry W. Stowe—all of Los Angeles.

The Savage Tire Co. has recently opened a branch store in Los Angeles which, in common with all the other branches of the company, is supplied with well-equipped service cars which care for the tire troubles of all motorists, whether users of Savage tires or not, within the city limits of the cities where branches are located. Savage factory distributors, located in all the principal traffic centers, give a like service.

A remarkable record for the United States Tire Co.'s tires was brought to the attention of Manager Wilkinson, of the Los Angeles branch, in the travels of Harold L. Arnold's car, which has been used in scientific work. The first trip was across Death Valley and over the mesa of Western Nevada to Rhyolite in search of ore. No tire trouble was experienced on this trip of more than 2,000 miles across the sands, gravel washes and great ridges which cut out tires quicker than any other sort of road. The car traveled 9,000 miles on one set of United States tires.

RUBBER EXHIBITS AT THE SAN FRANCISCO EXPOSITION.

Though the distance between the rubber manufacturing centers of the east and San Francisco is too considerable to expect a large display at the San Francisco Fair of the products of eastern manufacturers, at the same time rubber is by no means absent from the list of attractions at this exposition. These rubber displays are for the most part made by western companies located near San Francisco.

One of the most interesting displays in the Manufacturers' Building is that of the Bowers Rubber Works of San Francisco. This firm gives a complete demonstration of the manufacture of garden hose. Pará and Ceylon rubber is shown in the bulk, and near at hand are workmen operating a loom for the purpose of weaving fabric for the rubber-lined hose turned out by that company. It is of interest to know that a record was made during the summer by the firm, when 32,000 feet of this hose was turned out without a single defect.

The Gold Medal Waterproofing Co., manufacturers of waterproof clothing of Oakland, California, has a fine display in the same building, which gives something of an idea of what is being done in the rubber clothing field by the western manufacturers.

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, \$6.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE outstanding topic for discussion in trade circles at the moment is the Budget, especially the items of war profits tax. Another tentative feature of the Budget which excited a great deal of discussion was the proposal to put a tax on imported motor cars, motorcycles and tires of 33½ per cent. To be sure, this idea has now been definitely abandoned, but it was not only suggested but for a brief time actually put in force, the basic idea evidently being that it was not only desirable to add to the revenue of the government, but to reduce our expenditure for foreign, and especially American products in order to bring the trade balance back more nearly to its normal position.

Just what effect this import duty would have had on tires if continued is a matter of speculation. Its immediate effect was the raising of prices by some of the tire manufacturers with plants in this country and the circulation of reports that some of the American manufacturers who have found an English market intended to establish factories in England. Just how much revenue would actually have been derived from such a tax is problematical, but there is plenty of evidence showing that our home manufacturers have not been able to supply the British demand for tires, in view of which fact undoubtedly a considerable importation would have continued.

With respect to the war tax on increased property, government contractors note with satisfaction that this applies to traders generally and not only to those who are entitled to write "contractors to the government departments" on their note paper. The tax has certainly been received with satisfaction by the army of professional men who, during the last twelve months, have seen their incomes, like the Snark, fading softly and silently away. It is perhaps not unnatural, however, that there should be a certain amount of grumbling among manufacturers of war material, which includes tires, at giving up 50 per cent. of their profits, which had been set aside for the payment of extensions to buildings now in progress. Such extensions, they argue, would not have been required for ordinary business and will be only partially utilized when affairs have returned to the normal. At many of our rubber works enlargement and rebuilding on a considerable scale is now in operation, and their position is certainly not on an equal plane with other concerns which have made large profits without any capital expenditure.

NEW RUBBER WORKS IN HOLLAND.

The rubber manufacturing firm of Wilhelmi & Co., of the Hevea works, Hoogezand, has bought some factories at Doorwerth, near Arnhem, in order to take up the manufacture of motor and cycle tires. It is also stated that premises have been acquired at Naarden, which is 15 miles to the east of Amsterdam, for the same purpose. In an advertisement in the English press for machinery it is significant that reference is made to second-hand machinery. Doubtless if the firm wishes to get to work quickly it is useless to insist on a new plant. Owing to circumstances which it would be superfluous to enumerate, the delivery of new machinery cannot be guaranteed for any near date, and this has led to the anomalous situation of old machinery costing more than new. To give an instance, if you want to buy a certain type of spreading machine you will be quoted £130 [\$632.64] for a brand new one, delivery when you get it. On the other hand, you can get a second-hand machine delivered at once, but the price asked will be £170 [\$827.30].

With regard to the Dutch rubber industry, those readers who have retentive memories will recall an interesting article on some Rotterdam works written by Mr. Pearson on the occasion of a visit to Holland six or seven years ago. Holland in past

years has been a good market for British, German and American rubber goods, and the new works must naturally tend to decrease the country's imports. Arnhem, which is situated on the right bank of the Rhine, is the capital town of Gelderland—on account of its scenery called the "Dutch Paradise"—and is only a few miles from the German frontier.

RUBBER OR GUM.

Referring to the proceedings in the London Prize Court with regard to the rubber consignments on the steamship "Friedland" and steamship "Kim," I feel constrained to say a few words in this column. I have only seen press reports of the trial, and these are necessarily condensed; but from these reports it might be taken that H. L. Terry, who was quoted by Mr. Baird, really thought that rubber and gum were interchangeable terms. In Terry's book it is stated that the term "gum" was commonly used for rubber in America, but he goes on to state that this practice is decidedly objectionable. This point seems to call for mention, as quite possibly it was not put before the attorney-general, who spoke somewhat slightly of the author named. The real situation is a somewhat anomalous one, as there is plenty of evidence as to the use of the term "gum" for rubber in conversation, but apparently none whatever as to its use in invoices or other commercial documents.

In Great Britain its use appears to be limited to boots, especially army rubber boots, which are very generally termed by officers "gum boots." Whether such boots have been invoiced to officers as gum or rubber boots is a matter on which I am making enquiries. But the present case is concerned particularly with the raw material, which is only associated in Britain with the well-known clauses of patents which refer to rubber, gutta percha and allied gums. With regard to the Continent, it is noteworthy that while the German-speaking peoples and the Scandinavians use the single term "gummi," the Latin nations qualify it by adding elastic—in French, *gomme élastique*; in Italian, *gomme elastica*, and in Spain, *goma elastica*, being the terms in common use.

PERSONAL.

The president of the Board of Trade has appointed Mr. Vernon James Watney, J.P., to be an additional member of the committee which deals with questions relating to the export of rubber and tin from the United Kingdom and British Possessions. This brings the number of the committee to four.

George Spencer Moulton & Co., Limited, whose works are also at Bradford-on-Avon, has suffered a severe loss in the death in active service of Lieutenant Eric Moulton, son of John Moulton, chairman of the company, who is a brother of Lord Justice Moulton, who, as a Fellow of the Royal Society, has taken a very prominent part on the government High Explosives Committee. The deceased officer was a grandson of Alexander Moulton, the founder of the firm.

EXPORT OF RECLAIMED RUBBER.

The North Atlantic Lines Conference has somewhat arbitrarily refused to take any further shipments of reclaimed rubber to America from London, Liverpool and other West Coast ports. It appears that this is due to fear that such shipments may reach the enemy. At the same time such shipments are not altogether stopped, because they are proceeding from Hull, to which town the railway freight has, of course, to be paid. Those interested have made strong representation to the shipping companies operating in the West, but so far with no result. Crude rubber is, of course, being regularly shipped from London to America.

COTTON CLOTH EXPORTS.

By order of the Board of Trade, new restrictions which will chiefly affect Lancashire will shortly come into effect, a committee of the Manchester Chamber of Commerce being now engaged in arranging the details. With regard to cloths unsuitable for air craft purposes, a Chamber of Commerce certificate will suffice in case of export, while for cloth suitable for air craft purposes, application for export must be made to the War Trade department in London. The tests to discriminate between the two sorts are count weight and ratio of strength to weight.

RUBBER MILL EMPLOYEES AT THE FRONT.

The rolls of honor of employees serving with the forces exhibited at most of our rubber works continue to grow in volume with the prolongation of hostilities. That at Charles Macintosh & Co.'s works now contains over 600 names. Regular collections have been made in their works for the various war funds, in every case the sum collected being supplemented by an equal sum subscribed by the company.

THE SIRDAR TIRE & RUBBER CO.

I may add to the notice I recently gave about the resuscitation of this Bradford-on-Avon company that the capital is held by the Avon Rubber Co., Limited, which runs it as a separate branch of its own business, in this respect following the procedure of an eminent firm in the north of England. The works are fully equipped with up-to-date machinery and have been kept in operation since the time the old company got into financial difficulties.

MORE FIRES.

An outbreak of fire, fortunately not of a serious nature, occurred on September 23 at the waterproofing works of J. Mandleberg & Co., Limited, Manchester.

Another fire of a more disastrous character broke out on October 1 at the works of J. E. Baxter & Co., Limited, which closely adjoin the Leyland & Birmingham Co.'s works at Leyland. The latter company's brigade worked hard both to subdue the outbreak and to prevent its extension to their own premises, a matter in which they were successful. The damage done on the scene of the fire was considerable, the cause being attributed to vapors from a spreading-machine catching fire.

VARIED ACTIVITIES OF THE FRENCH MICHELIN TIRE CO.

Since the war broke out in Europe the Michelin Tire Co., of Clermont-Ferrand, France, which is one of the largest tire manufacturing concerns in Europe, has been producing 6,000 pneumatic automobile tires per day. A great proportion of these tires are of the steel-studded leather-tread type which is very popular in Continental Europe, where almost every car is equipped with at least one rear tire of this type. The Michelin company does not manufacture solid rubber tires, but has an important valve manufacturing department which is now producing 8,000 fuses and 500 high explosive shells per day, and a wheel manufacturing department now engaged in manufacturing artillery wheels for the army.

ETABLISSEMENTS HUTCHINSON.

At the annual shareholders' meeting of the Etablissements Hutchinson, which was held recently in Paris, France, it was stated that the company's profits for the fiscal year 1914-1915 amounted to 2,446,152.65 francs (\$472,107) as compared with 2,353,188.72 francs (\$454,165) in the preceding year, showing an increase of \$17,942. The president of the company, Mr. Georges Lelièvre, stated that in spite of the many difficulties the present year promised to be very satisfactory.

It will be remembered that the Etablissements Hutchinson is an important rubber manufacturing concern which was established in France in 1853 by Hiram Hutchinson, an American.

MR. MANDERS APPOINTED PRESS MANAGER.

THE Rubber Growers' Association, of London, has appointed A. Staines Manders as its press manager, and a better selection could not have been made in all England. Getting the press to devote its valuable space to commercial topics is an art. It is altogether a legitimate art, for the press is always glad to print what will appeal to its readers, even though it may advance the interests of some particular industry, and Mr. Manders has the gift as few men possess it of bringing to the attention of the press the most interesting features connected with the rubber industry.

It will probably be remembered that when he arrived in New York some months previous to the rubber show, held in that city in 1912, to finish the preparations necessary for that event, he was interviewed regarding his mission by the reporters of the New York papers. He gave them much valuable information regarding the rubber exposition that was to be, but one particular statement which he made, namely, that scientific analysis had shown that the dust of the city streets—through attrition of tires, heels and horse shoe pads—was 12 per cent. rubber, struck the reporters as something distinctly new, and as a result of that interview a great deal of space in the American press, including both city and rural papers, was given to the discussion of this new idea. It was discussed from its economic and sanitary standpoints, and in this way a great deal of public attention was directed towards the coming rubber show, which was of course what Mr. Manders wanted to accomplish.

Mr. Manders has organized and managed four international rubber expositions—three in London and one in New York—the success of which depended upon the amount of publicity the daily press of the two cities was willing to give these enterprises; and the amount of space which they received was ample proof that Mr. Manders knew just how to prepare his press matter so that it would pass the editorial test.

The Rubber Growers' Association, of London, represents the important planting interest of the East, which has already reached vast proportions and will soon be one of the great industries of the world. With Mr. Manders as the press manager of this Association the Eastern planters need never fear that their light will be hid under a bushel.

IMPORTS OF RUBBER GOODS INTO BRITISH SOUTH AFRICA.

Statistics of imports of rubber goods into British South Africa are given under two headings only—conveying hose and rubber and gutta percha.

During 1914 the imports of conveying hose amounted to \$95,120, as compared with \$108,974 for the previous year, showing a decrease of \$13,854. Imports of rubber and gutta percha, specifically, amounted to \$116,479 and \$118,140 in 1914 and in 1913 respectively, showing a decrease of \$1,661 in 1914.



A. STAINES MANDERS.

The Rubber Trade in Germany.

By Our Regular Correspondent.

SINCE my last communication there has been no amelioration in the general state of affairs here. At present there is a little more movement in commercial and industrial circles than there was at my last writing, but this is only the natural sequence of the dead summer season. Business continues to suffer from the confused conditions we are experiencing. Before this war we had no idea of the effect it would have on our commercial and industrial life. Practically all those doing any considerable business are working either directly or indirectly for the army. Manufacturers who never before had anything to do with government supplies are overrun with war orders. Industries that could exist only with difficulty in peace times are now doing a flourishing business, while others that were prosperous under normal conditions have been ruined by the war.

One of the greatest sources of trouble is the lack of orders. Everybody is either saving or has nothing to spend, a state of affairs most injurious to general trade. The rubber industry is, of course, not an exception to the general rule. While large dealers having direct or indirect commercial connections with the government have more orders than they can fill, the small dealers cannot secure enough business for their needs.

The rubber industry, like all of our industries that depend upon foreign countries and the colonies for their supplies of raw materials, is suffering greatly from the present situation, but conditions would long ago have been worse than they are had not our manufacturers taken advantage of the low prices prevailing in the rubber markets just previous to the war, when they stocked large quantities of crude rubber. The government also deserves credit for the judicious manner in which it organized the preserving and distribution of raw materials. Now we realize the mistake we made in purchasing our crude rubber in foreign markets. Had Hamburg been our chief supplier of crude rubber, a larger stock of it would have been on hand there when the war broke out. Most of our manufacturers, however, purchased their crude rubber in foreign markets and the rubber trade of Hamburg, though great, was not a German trade; Hamburg was a receiving point for redistribution to other countries, especially Russia and Scandinavia.

Unskilled employees, including those who do not know how to make out an order and those who do not know how to fill one, are causing much trouble to both dealers and manufacturers. This will be readily understood when I state that in many cases not only all the old employees are at the front, but also the managers and employers themselves.

The number of articles no longer to be had in other than substitute qualities, like the list of those no longer to be had at all, is constantly increasing. The greatest trouble is that many substitute qualities do not give satisfactory service. Answering complaints and making adjustments have become the principal occupations of our dealers and manufacturers of rubber goods. The most difficult position is certainly that of the dealer who, to keep his trade, is obliged to make all sorts of promises and, not being backed up by the manufacturer's warranty, is obliged to make good at his own expense, or lose his customers.

The demand for rubber coats never has been so large in Germany as in the last year. Good crude rubber is essential in making rubberized garments. Substitute rubber-proofing gives poor service. Our manufacturers are not allowed to use crude rubber for making garments and can only deliver "war

qualities"; but the prices asked for these garments have been extremely high and have led customers to believe they were getting the very best Germany can produce. As this is certainly not the case, much discredit has fallen on rubber coats and other garments of native manufacture. We fear that the industry will suffer from this false impression, and those interested have already organized to explain matters to the public and make it clear that German rubber coats should not be judged from the quality of those purchased this year under war conditions. An "Association of German Rubber Garment Manufacturers" has been formed, with headquarters in Berlin, for the protection of the German rubber garment industry.

Many rubber manufacturers here are relieving their difficult situation by producing small articles for the comfort of the troops in the field. Of this class of articles are ground-cloths, proofed caps, proofed face and neck protectors, gas-masks and the like. These are sold by mail-order, mostly, but also by dealers, either direct to the soldiers at the front or to their relatives at home, who forward the goods to them. Military doctors have been prescribing foot-arches for men suffering from flat feet. The continuous strain of long marches with heavy equipment has caused much suffering from this source and the manufacture of foot-arches has become a feature of the business of many of our rubber manufacturers.

One peculiar effect of the war has been the increase in the demand for flexible truncheons or clubs of the type used by the London police force. These truncheons are made of a combination of rubber and fabric. They are not used by our troops for defending the Fatherland, but are purchased by the people at home for their personal protection against the tramps and vagabonds that infest the country in these troubled times.

Returning to the subject of substitutes or "war qualities," as we call them here, tire casings made from reclaimed rubber are giving fairly good service on bicycles, but inner tubes made from reclaimed rubber are of no value at all, and several organizations interested in tires have petitioned the Imperial War Minister asking that small quantities of crude rubber be allowed to manufacturers from time to time for making inner tubes.

The mechanical packing trade, which has suffered less than others, is now badly affected by the high cost of asbestos, which, owing to the shortage of rubber, has been used in great quantities for mechanical purposes. Lately the price of asbestos and asbestos articles has increased 25 per cent.

The spinning and weaving industries, which heretofore have been very active, have been much curtailed because of the fact that the government has been obliged to restrain and regulate the use of textiles. According to the latest government decree spinning and weaving factories must not work more than 10 hours per day and not more than five days per week.

The surgical rubber industry is now obliged to follow the same course as other industries and offer substitute qualities. The army and navy sanitary services alone are still receiving first-class surgical rubber goods. In Belgium our military governor has prohibited the manufacture of surgical goods and also of leather goods, except in cases where special permission is granted by the delegate of our war department attached to the Belgian service.

The price of rubber insulated wires, all of which are being made in substitute qualities only, recently increased 20 per cent.

Benzol and naphtha solvents can now only be used by firms working directly or indirectly on government orders. A recent decree fixed the qualities and prices of these solvents as follows:

| | Marks. | U. S. Currency. |
|---|--------|-----------------|
| Pure toluol per 100 kilos, (220 pounds) | 45 | \$10.71 |
| Benzol, naphtha solvent and xylol..... | 63 | 14.99 |
| Combination of 70% benzol and 30% alcohol.... | 67 | 15.95 |
| Combination of 25% benzol and 75% alcohol.... | 74 | 17.61 |

Other combinations or mixtures than those above given are not allowed. The shortage of crude rubber and the general use of reclaimed qualities make the rubber reclaiming business exceptionally good; all the reclaimers here are very busy.

We hear that the advance of our troops in Russian territory has obliged the "Prowodnik" factory to remove to Charkow, and that there is even a question of transferring this huge rubber plant to a point beyond the Ural mountains.

Our rubber manufacturers have been large contributors to all the government's war loans. Only recently the Continental company of Hanover contributed 5,000,000 marks to the third war loan, while its employees subscribed 1,000,000 marks, making the total contribution of the Continental works 6,000,000 marks [\$1,428,000] for the third loan alone.

The reopening of our foreign trade after the war is a subject that is receiving much serious attention here. In my last letter I mentioned rumors of German interests collecting large quantities of raw materials in neutral foreign countries to be rushed to Germany as soon as peace is resumed. Meetings have been held and will continue to be held by representative organizations to discuss the future of our foreign commerce.

The scarcity of rubber and manufactured rubber goods led our government recently to instruct school teachers to tell their pupils to search the roadways over which they pass and pick up all pieces of glass and sharp metal likely to injure the tires of cycles and motor vehicles. From all sides we hear that the effect of these orders has been magical and that tire trouble brought about by glass, nails, sharp iron junk, etc., is now quite insignificant.

A GERMAN VIEW OF THE EFFECT OF THE WAR ON THE WORLD'S MARKETS FOR RUBBER GOODS.

A RECENT issue of the "Gummi-Zeitung," published in Berlin, contains a comprehensive article giving the German view of the effect of the war on the world's markets for rubber goods and the possible future of the international trade in this line. Here is the gist of the article:

Before the war broke out the world markets had been well stocked in rubber goods of all kinds, with the possible exception of mechanical goods and toys. The demand for mechanical goods is one of the most constant and regular in the rubber trade. Germany was perhaps the most important supplier of the world's requirements in this line, but England, France and the United States also produced and exported large quantities of rubber mechanical goods. There being so many sources of supply, importers and dealers felt sure that, should any one of their providers become incapacitated, they could rely on the others to supply their demands.

In this they made a grievous mistake. Germany was cut off by the war, but England and France could not take her place, for their manufacturers were too busy manufacturing for domestic and war needs. There remained the United States, who accepted an agreement with England that has tied up her export trade in rubber goods. Even were there no such contract to restrict their operations, American manufacturers could do but little foreign trade, for their domestic market absorbs practically all their production of rubber mechanical goods. The result is that most European countries have all they can do to supply their own needs, while

China and other foreign markets are obliged to suffer and wait.

Rubber footwear was part of the wearing apparel of practically every Chinaman. Northern China obtained most of its rubber goods from Russia, which can hardly be expected to be able to continue business under present conditions. The Allies are absorbing all the rubber footwear they can produce and a good portion of the American production. The rest of the American production is consumed by the domestic market. The same state of affairs exists throughout the rubber trade of the world. Germany hears from all sources that there is a shortage in rubber goods.

However, it cannot be said that the demand for rubber goods is very large. Outside of mechanical goods the demands have, generally speaking, been rather limited. The unsettled state of affairs leads merchants to purchase only from hand to mouth and to allow their stocks to become depleted. This practice will prevail until the war is ended. "What will happen then?" There will be a great boom in the rubber trade.

In spite of all the writings of the British press, South Americans and other neutrals will be glad to purchase German goods. Little inclination has been shown towards purchasing British goods. The trade Germany is losing while the war lasts goes to America. When South America shall have exhausted the supply of rubber goods Germany furnished her during the six months preceding the war she will look to the United States for further supplies. The British press states that Germany's losses are American profits. This is so. But America's gains are also British losses. Neither America nor England can compete successfully with German rubber goods, for their costs of production are too great. That is why they have been obliged to specialize in their exports of rubber goods. Germany sells all kinds of rubber goods, while they have to specialize in a few lines in which they can offer better conditions and prices. German merchants can offer the entire line as a whole at better prices and they will soon regain their supremacy when peace is re-established. America's gains will be but temporary except in a few special lines. The real loser in this war will be England.

CONDITIONS IN RUBBER TRADE IN HOLLAND.

The American Consul-General at Rotterdam, Holland, reports that only \$250,000 worth of rubber shares was subscribed to in the Netherlands in 1914, as compared with \$1,470,000 offered and subscribed to in that country during the previous year. Notwithstanding the fact that few shipments of rubber were received during the latter five months of 1914, the imports of crude rubber for that year exceeded those for 1913 by something like 650,000 pounds, the total for 1914 being 2,935,066 pounds, against 2,286,900 pounds for the preceding year.

The port of Rotterdam's exports of crude rubber to the United States amounted to \$302,520 in 1914 as compared with \$159,789 exported to this country in 1913, showing an increase of \$142,731. While the exports of rubber waste amounted to \$76,743 in 1913, Rotterdam only shipped \$19,188 of rubber waste to the United States during 1914.

RUBBER FAMINE IN SWEDEN.

Mention has already been made in these columns of the tire famine prevailing in Sweden through the government's failure to comply with Great Britain's request that it place an embargo on all exports of rubber and rubber goods. Late reports from reliable sources stated that matters had become so serious that only 160 motor cars were able to continue service in Stockholm owing to the shortage of tires. Lately, however, the government has acceded to the British demands and the serious situation created by the lack of rubber will no doubt soon be removed.

RUBBER PLANTING NOTES.

EFFECT OF THE WAR ON THE RUBBER TRADE OF THE NETHERLANDS INDIES.

CRUDE rubber, generally speaking, has not been injuriously affected by the war. On the contrary, the war appears to have benefited the rubber trade in many instances; this in spite of the fact that one of the world's largest consumers of crude rubber is cut off from all sources of supply. In any event, the war has caused some important changes in the world's rubber markets. Antwerp has ceased, at least temporarily, to be a crude rubber market and the Amsterdam market has been greatly affected. London has become even a greater center for crude rubber sales than it was before the war, and a new rubber market has been created at Batavia.

Americans and Japanese are now purchasing rubber in Batavia and having it shipped direct to destination. During the first five months of 1915 the exports of crude rubber from Batavia to America direct amounted to 2,596,906 pounds, as compared with 67,316 pounds during the corresponding period of 1914 and 13,708 pounds during the first five months of 1913. Batavia's direct exports to Japan during the first three months of 1915 aggregated 191,571 pounds, as compared with no exports of crude rubber at all in 1913.

On the other hand, only 532,145 pounds of crude rubber went from the Dutch East Indies to Holland during the first quarter of 1915 as compared with 1,572,973 pounds shipped during the corresponding period of 1914.

The difficulties experienced at the opening of the Batavia market through lack of shipping facilities have been overcome by the creation of regular steamship services between that port and the United States and Japan. Prices in the Batavia crude rubber market are based on London prices.

EXPORTS OF RUBBER FROM BURMA DURING 1914-1915.

The production of rubber in Burma is steadily increasing. During the fiscal year 1914-1915 the exports of crude rubber from this British colony amounted to 987,392 pounds, as compared with 765,073 pounds exported during the previous fiscal year. Of the exports for 1914-1915, 892,304 pounds were shipped to Great Britain and 82,992 pounds to the Straits Settlements, the remainder going to various other destinations.

RUBBER IN SOUTH INDIA.

The exports of crude rubber from the Presidency of South India, British India, during the fiscal year 1914-1915 increased 50 per cent. in quantity and 19 per cent. in value as compared with the previous fiscal year. Like many other countries, South India is having its labor troubles. These are of a peculiar kind. The tremendous growth of the rubber planting industry in Ceylon and Malaya creates an enormous demand for labor in these countries, which have been obliged to import coolies from abroad and especially from South India, with the result that labor is short on the plantations of the Presidency. Though the war has caused emigration to slacken somewhat, it still continues on an alarming scale, and several boards have been formed in South India to devise ways and means for checking the tide which is menacing the future of the local plantations. For the fiscal year 1914-1915, in spite of war conditions, 49,028 men, women and children left South India for the Straits Settlements, 79,757 went to Burma and 144,146 to Ceylon. During the previous fiscal year these emigrations amounted to 117,783 to Malaya, 130,725 to Burma and 190,059 to Ceylon.

CEYLON RUBBER PLANTATION ACREAGE.

According to the Ceylon Blue Book for 1914 the total area under rubber in the island amounted, in 1914, to 168,178 acres. During that year 34,353,099 pounds of crude rubber were exported.

CEARA RUBBER IN BRITISH NORTHERN NIGERIA.

The hermattan, an intensely dry land-wind of the coast of Africa, has always been a formidable barrier in the way of the cultivation of perennial plants in the northern provinces of British Nigeria, and, according to the 1913 and 1914 annual reports of the Agricultural Department of these provinces, published recently, experiments are being conducted by that department to determine how well *Ceara* rubber trees can be developed to resist this dreaded wind.

Ceara seed was sown at distances of 12 x 12 feet and germination was quite regular and uniform so that most of the saplings reached a height of 6 feet during the first six months. At this point the hermattan caused the leaves to fall from the young *Ceara* plants, thus arresting their development. The experiments will continue.

MR. WRIGHT MAKES SOME ESTIMATES.

Writing recently of the past and future of the rubber planting industry, Herbert Wright, editor of "The India Rubber Journal," states that the world's consumption of crude rubber has been increasing, for the past five years, at the rate of at least 12 per cent. per annum. Though 1914 could not be considered a normal year, some of the world's most important consumers of crude rubber being shut off from supplies during half of the year, the consumption of crude rubber increased normally.

As to the future, Mr. Wright estimates the total Mid-Eastern production for 1915 at 80,000 tons. Regarding consumption he believes that America alone will consume 80,000 tons of crude rubber, and if the war should terminate during the year, Germany and Austria would need at least 40,000 tons to re-stock their factories and supply the urgent needs of their population. In his opinion the rubber planting industry will be in a much stronger position after the war than it ever was before.

PYROLIGNEOUS ACID FOR COAGULATING RUBBER.

Dry distillation of coconut shells yields crude acid of 10 to 12 per cent. strength. When diluted to 1 in 10 of water it can be used for producing smoked rubber at a greatly reduced cost.

THE RUBBER SITUATION IN DUTCH GUIANA.

By Our Regular Correspondent.

SUCCESSFUL HEVEA CULTIVATION IN DUTCH GUIANA.

THE Compagnie Des Mines D'or de la Guyane Hollandaise is to be congratulated on the successful cultivation of 39,418 rubber trees, 9,000 of which will be tapped for the first time during this year.

M. Gufroy, the president of the company—which is located in Paris—visited the colony as far back as 1906, and at the time contracted the rubber fever. He purchased thousands of seeds of the *Hevea Brasiliensis* variety, and took them along with him to the concessions, which are situated on the extreme limits of the colony bordering on the Brazilian frontier. The seeds were first planted out in nursery beds and afterwards transplanted on the hill sides of the mine. They grew wonderfully, and in almost every case are today fully developed, and, as before stated, tapping operations are to begin during this year.

This French concern deserves great praise for the foresight displayed by the president in adding to the revenues of the mine, which, by the way, is the largest gold producer in Dutch Guiana. In 1914 no less than 328½ kilograms pure gold was produced by the crudest methods of hand labor, and it is expected that by the end of 1915 their revenues will be greatly increased by the addition of a big rubber production.

It is the intention of the company to plant out every available foot of land on the property with *Hevea Brasiliensis*, and so create a monopoly in the business in future.

The close proximity to the forest of Brazil, the home of the *Hevea*, may in a measure account for the rapid and successful growth of the trees on the company's concessions. It must not be forgotten that the land on which these 39,418 rubber trees are flourishing so luxuriantly is purely mountainous and rather rocky. This fact goes to prove the theory of some planters in the colony to be all wrong that *Hevea* only thrives well on the flat marshy soils on the coast, where the plantations are located. The distance from the coast to the mines is about 200 miles, along the winding Maroni river, and then into the Lawa, which takes its rise in the Tumuc Humac mountains, which divide the colony of Dutch Guiana from Brazil.

REVIVAL OF THE BALATA INDUSTRY.

Although bleeding operations began late in the season, the returns have been considered satisfactory under the circumstances, and the amount of balata so far reported at the Custom House is 745,960 kilograms [1,641,112 pounds]. There are several thousand kilos, however, not yet ready for shipment from the concessions to Paramaribo, owing to the dry state of the upper rivers which renders transportation slow and expensive. A journey, that is accomplished under normal conditions in three or four days sometimes in dry weather requires as much as twenty days.

Balata gathering, with the thousand and one difficulties connected therewith, is not an ideal job and those engaged in the business are deserving of every encouragement and support.

The company in New York that was instrumental in adjusting the new ordinance, through the authorities at Washington, of which mention was made in the September number of THE INDIA RUBBER WORLD, is doing well and expects to reap a good harvest of balata, although operations began late in the season. This concern is operating with a very large number of laborers and has a substantial office administration in Paramaribo. It is an example of what can be accomplished when capital and intelligence are combined.

Since my last communication, importations from the United States have increased by 100 per cent., and, especially noticeable are such commodities as beef, pork, flour, fish, canned goods, with a large quantity of kerosene oil and gasoline. This increase in the imports only goes to prove that matters are being gradually adjusted in the balata business, and that in the course of time this once flourishing industry will revive and become, as in times past, the colony's main source of revenue.

The prospecting season begins in a few days, and several expeditions are leaving town for the interior, where line-cutting will continue until the end of the year. It is said by some well-informed people that vast tracts of country have been recently discovered with as many as ten trees of tappable size to the acre.

LEAF DISEASES ON THE RUBBER PLANTATIONS IN SURINAM AND BRITISH GUIANA.

In consequence of the reported outbreak of leaf disease in connection with the rubber trees on some of the plantations in the colony, I communicated with a plantation proprietor in British Guiana—where all, or nearly all, of the trees are said to be afflicted—to ascertain what steps had been taken in that colony to check the spread of the disorder, and was informed that G. E. Bodkin, the government economic biologist, had left Georgetown for the government experimental station at Christianburg, where he will undertake certain measures to ascertain the most effective way of controlling the disease by spraying.

The disease is said to have affected the rubber trees at the Consolidated Co.'s plantations in the northwest and on the Essequibo, at Coverden on the Demerara river, Greenheart Camp, and at the Christianburg experimental station. It has not yet been ascertained whether Berbice county has been affected also.

Professor Harrison has stated that the disease was first noticed by him about 1900, at Noitgedacht, in the Canal Polder, and then at Greenheart Camp, and subsequently at Christianburg, where the government experimental station is located. His de-

partment investigated, and since that time the disease has been reported at various rubber estates. Some of them have been very extensively attacked, and some slightly, where the pest was looked after in time. Now the department is taking steps to see what is the most effective way of dealing with the disease. He anticipates that on the return of the government biologist from Christianburg he will be able to give some definite facts.

Professor Harrison pointed out that the most unfortunate part of the disease was that after it attacked the plants it checked their growth. Then after the leaves had fallen there was always the possibility of the disease extending to the other plants. It is wise to keep the disease under control at an early period; but complaints are now coming in from planters who possibly have not done so. Professor Harrison was also of the opinion that the disease had possibly spread from the native to the cultivated rubber trees.

Mr. Petch, the government mycologist at Ceylon, writing recently about the leaf diseases of the *Hevea Brasiliensis*, said: "The fungus which causes the diseases was first described by Hennings in 1904, under the name of *Dothidella Ulci*. The specimens had been collected by Ule in the upper Amazon Valley, Jurua (Acre Territory), on the banks of the Rio Jurua, Mirum (Acre Territory), and on the banks of the Amazon in the neighborhood of Iquitos (Peru). Hennings did not give an account of the injuries caused by the fungus. Dr. Huber, however, on the occasion of his visit to Ceylon, stated that it sometimes caused serious damage and defoliated the trees. In 1911," continues Mr. Petch, "Dr. J. Kuyper described what was considered a different leaf disease of *Hevea* from Surinam. The disease occurs in three forms. In the first stage the young leaves, only three to five days old, exhibit transparent olive green or dark green patches, which are sometimes so numerous that the whole leaf blackens and collapses. In the nurseries, sometimes, every plant is attacked. *Hevea* leaves grow rapidly, and apparently the fungus cannot attack the older tissues. More recently, Bancroft has recorded another leaf disease, from British Guiana. The symptoms were a spotting of the leaves, followed by an increase in the size of the spots, with the production of dried areas which eventually fall away from the green parts, leaving holes in the leaf surface." Mr. Petch concludes that it would appear probable, therefore, that the British Guiana leaf disease is the same as that of Brazil and Surinam.

The Department of Agriculture at Paramaribo is now making extensive examinations on many of the rubber plantations with a view of adopting the best scientific measures for combating the disease. On a recent visit to plantation Voorburg the courteous manager, Mr. Arntz, was kind enough to take me through his drying factory, where I was treated to a sight of nearly 1,000 kilograms of fine Para rubber in sheets. This plantation is run by an experienced man and can lay claim to being the best rubber producing estate in Dutch Guiana.

Mr. Arntz informed me that previous to his trip to the Far East last year he was quite pessimistic about the rubber industry ever making good in the colony, but since he was in a position to see for himself and to study Far East conditions he has now become quite an optimist and entertains great hopes for the future rubber industry in Dutch Guiana.

ARGENTINE EXPORT PROHIBITION.

A recent presidential decree of the Argentine Republic prohibits, among numerous other things, the exportation of rubber goods.

VENEZUELAN CUSTOMS TARIFF LAW.

The Republic of Venezuela has promulgated a new customs tariff law, in which goods are specified under categories rather than under each class of the tariff. Waterproof clothes of wool and rubber are dutiable at 10 per cent. ad valorem; while waterproof clothes of cotton and rubber are taxed 25 per cent. specific; rubber belting at 25 per cent. specific, and suspenders, braces and garters at 50 per cent. specific.

THE RUBBER SITUATION IN THE AMAZONS.

By Our Regular Correspondent.

THERE has been a genuine awakening here since my last letter. Our people are beginning to see the real cause of their troubles, and there is a serious movement under way to find a remedy. We are actually starting to devise rational ways and means for reorganizing the economical life of the country.

Rubber was for many years the sole foundation of the economical edifice in this part of Brazil. We called it "black gold," and it was almost as stable a standard as gold as long as we held the monopoly of its production. But we have lost this monopoly. We are no longer first among the world's producers of crude rubber. Other countries now produce and sell more rubber than we do. Our standard is depreciated; the foundation of our economical structure is gone and with it the structure itself. We shall have to rebuild.

When the present crisis was first felt, in 1913, we believed it to be the same sort of experience we had passed through so often before. But we were mistaken. The present crisis is not like the others; it is deeper rooted. It is a crisis of transition, a phenomenon of economical evolution. There is no use counting, as heretofore, on some intervention of Providence; we must act ourselves and waste no more time in vain hopes. To count on the destruction of Eastern plantations by disease or plague, as some have been disposed to do, is pure folly. No more relief for us can be hoped from this source than from the war. When the latter broke out and prices of crude rubber increased, many of our people felt sure that old averages would again be attained. You know how faulty this calculation has turned out to be.

We must reorganize and rebuild. Rubber is going to count in the future prosperity of this part of the Union, but it will not be all, as it was in the past. The greatest obstacle in our way certainly is tradition—old habits. Our soil, of course, is perfect for the rapid and healthy development of rubber plantations. We certainly can produce as good, if not better, rubber than other countries, and we are nearer than they are to the consuming markets. Our whole problem is the reduction of the cost of production. The lack of labor, which has always been an obstacle in the way of reducing the cost of our crude rubber, is being remedied by extensive immigration, mostly from the southern Brazilian states. The great factor in the cost of crude rubber production now, as heretofore, is the expense of living, which must be materially reduced.

Here is where habit stands in our way. Our people are so used to relying on foreign countries for their supply of the necessities of life that it is not easy to educate them to understand that this system is the principal cause of their troubles. But the people are beginning to pay more attention to the production of the necessities of life. Farming and stock-raising will decrease the amount of our imports, and consequently they will lessen the amount of money spent abroad. Coöperative associations for production and consumption are being organized. Rural credit will be developed and organized to facilitate the purchase of the necessary implements for farming and for raising stock.

Modern agricultural systems will be substituted for the primitive methods now generally in vogue in this country. The work of reorganization has started and it will be carried on actively, though with care not to interfere more than necessary with present business methods.

Our forest wealth will continue to be exploited and at the same time improved. Our people will be taught to recognize the possibilities their land offers them. New means of communication and new markets will be created, while those already in existence will be modernized and improved. Private shipping concerns will be encouraged, and we believe the best way to do this is to see that they are supplied with freight to carry the whole year round. When the economical transformation of the Amazons shall be an accomplished fact, with the abundant

local production of the necessities of life, and with increased trading facilities, incidentally we certainly shall be able to compete with the Orient, whose sole advantage lies in low cost of production. The future of this country is not so black as many are inclined to believe it to be. Our new economical edifice will be built with rubber as part of its foundation, and not as the whole foundation, as it was in the case of the old structure now wrecked.

There is a rumor here that the government intends to send a national transport steamer, the "Sargento Albuquerque," to Holland with a cargo of coffee, crude rubber and other products.

Statistics for the fiscal year 1914-1915 show that our exports of crude rubber amounted to only 35,305 tons as compared with 39,115 tons exported during previous fiscal year—a decrease of more than 9 per cent.

AUTOMOBILE TIRES IN BRAZIL.

Crude rubber is the second in importance of Brazil's exports, but there are no automobile tire factories in Brazil, where, up to the present time, French, English, German, Italian and Belgian tires have dominated the market. This fact is principally due to the experience of European exporters and the long credits they allow to reliable dealers in Brazil. European tires are furnished in all styles and sizes to meet the requirements of American as well as of European-made cars. American tire manufacturers only supply about 3 per cent. of all the tires used.

The customs duty on automobile tires was 5 per cent. ad valorem until March 31, 1915, when the new law for protecting Brazilian rubber was put in force and an import duty of 50 per cent. ad valorem placed on all automobile tires not made of fine Para. As is known, the customs officials were unable to enforce this law owing to the difficulty of determining the origin of the rubber. New rulings have modified the law so that now importers, on paying the old duty of 5 per cent. ad valorem, sign a promise to pay the difference of 45 per cent. in the event the legislature should fail to repeal the "fine Para" law.

The Michelin Tire Co., of France, whose tires have quite a vogue in Brazil, publishes normal price lists for all of its types and sizes of tires, together with the extra charge imposed by reason of the increase in Brazilian customs rates, and binds itself to refund these surcharges to the purchaser in the event the law is repealed. For instance, the Michelin price lists show: 34 x 4-inch tire-casing, "Semelle" type (leather steel-studded non-skid tread), normal price \$40.75; supplementary charge \$14—to be refunded should Congress repeal the "fine Para" tariff law.

WILL AMAZONAS PERMIT "CUTTING" OUTSIDE THE STATE?

Manaos owes her commercial supremacy to the old law which prevents "cutting" rubber outside the boundaries of the state. There has been a rumor of a recent discussion in the State Congress of Amazonas concerning a change in this time-honored decree. Should the law be changed permitting rubber to be "cut" outside of Amazonas it will be a severe blow to the rubber commerce of Manaos. "Cutting," it might be added, is a collective term that denotes cutting, grading, sorting, packing and shipping.

EXPORT TAX ON RUBBER ADVANCED BY THE STATE OF AMAZONAS.

A law has been passed by the Congress of the State of Amazonas, Brazil, raising the export duty on rubber from 15 per cent. to 18 per cent. This action was taken without the slightest warning and caused consternation in the trade. Many exporters had already bought several hundred tons of rubber on the 15 per cent. basis and were faced with a loss of 3 per cent. The Chamber of Commerce of Manaos has protested to the Governor, who finally permitted shipments to go forward at the 15 per cent. rate by the first American and European steamers sailing after the new tax was declared.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED SEPTEMBER 21, 1915.

- N**O. 1,153,948. Vehicle wheel. H. V. Pannecoucke and H. Schaefer—both of Detroit, Mich.
 1,154,055. Force cup. G. C. Reeves, Chicago, Ill.
 1,154,069. Audiphone. C. Soret, Havre, France.
 1,154,119. Resilient tire. D. M. Kampler, assignor of forty-seven and one-half one hundredths to J. Rosenwasser—both of New York, N. Y.
 1,154,154. Spanner or Wrench for use with a detachable vehicle wheel. W. Wright, Stoke Park, Coventry, assignor to The Dunlop Rubber Co., Limited, Aston Cross, near Birmingham—both in England.
 1,154,216. Vehicle wheel rim. W. F. Stengel, assignor of one-half to J. Benker—both of Akron, Ohio.
 1,154,218. Demountable rim. J. J. Stosick, South Milwaukee, Wis.
 1,154,259. Hose coupling. C. H. Light, Des Moines, Iowa.
 1,154,280. Undergarment in which elastic fabric is used. A. Wylie, Rockville Center, N. Y.
 1,154,288. Collapsible rim. W. B. Christopher, assignor of one-half to C. C. Baxter—both of Birmingham, Ala.
 1,154,318. Tire filler. H. J. S. Keim, Catasauqua, Pa.
 1,154,372. Battery cell. A. P. Burritt, Oxone Park, N. Y.
 1,154,442. Tool for repairing tires. F. Sevison, Muncy, Pa.
 1,154,476. Filling device with rubber sleeve. H. S. Benjamin, Rochester, N. Y.
 1,154,484. Resilient tire for road vehicle. W. H. Carmont, Kingston, England.
 1,154,491. Orthopedic cushion. L. DeOliva Deol, New York, N. Y.
 1,154,497. Wheel with flexible tire. J. F. Evans, Martinsburg, W. Va.
 1,154,504. Vehicle wheel tire. A. W. Gano, Carrollton, Ill.
 1,154,525. Anti-skidding and traction appliance for vehicle wheel. J. McMullen, Butte, Mont.
 1,154,529. Game table with elastic cushions. L. Meluzzi, Buenos Aires, Argentina.
 1,154,556. Hose supporter. B. S. Alsop, New York, N. Y.

ISSUED SEPTEMBER 28, 1915.

- 1,154,629. Demountable rim. C. C. Harbridge, assignor to Detroit Demountable Rim Co.—both of Detroit, Mich.
 1,154,817. Multiple chamber pneumatic tire. J. W. Turner, Kirksville, Mo.
 1,154,848. Pneumatic tire. H. S. Dew, De Walt, and W. H. Minton, Missouri City—both in Texas.
 1,155,018. Piston packing. G. S. Towne, Oakland, Cal.
 1,155,025. Rubber tread flexible armor for pneumatic tire. C. L. Wolfe, Brooklyn, N. Y.
 1,155,046. Storage battery. W. A. Crowds, assignor of one-half to Atkinson, Mentzer & Co.—both of Chicago, Ill.
 1,155,047. Storage battery. W. A. Crowds, assignor of one-half to Atkinson, Mentzer & Co.—both of Chicago, Ill.
 1,155,053. Tire of shoe holder for automobiles. F. W. Ehrlich, Newark, assignor to E. A. Whitehouse Mfg. Co.—both in New Jersey.
 1,155,209. Heel grip. M. H. Burke, Denver, Colo.
 1,155,246. Resilient wheel. A. Jutilla, Orr, Minn.
 1,155,255. Tire. J. E. McCoughtry, Gary, Ind.
 1,155,315. Wheel for self propelled vehicles. J. McGeorge, assignor to The Cleveland Engineering Co.—both of Cleveland, Ohio.

ISSUED OCTOBER 5, 1915.

- 1,155,367. Liner for pneumatic tires. F. E. Neal, Anderson, Ind.
 1,155,394. Pneumatic tire mounting. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
 1,155,395. Vehicle wheel. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
 1,155,396. Mounting for tire. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
 1,155,397. Vehicle wheel. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
 1,155,398. Demountable rim for automobile wheels. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
 1,155,413. Non-skidding device. M. C. Gannett, Brooklyn, N. Y.
 1,155,417. Pneumatic tire mounting. C. G. Hawley, and E. K. Baker, assignors to Universal Rim Co.—all of Chicago, Ill.
 1,155,575. Core formed of a resilient rubber substitute. W. Hoskins, La Grange, Ill.
 1,155,577. Patch for pneumatic tire. L. H. Israel, Fairfield, Iowa.
 1,155,584. Medicine dropper. F. C. La Grange, Cedar Rapids, Iowa.
 1,155,611. Fountain pen. H. W. Pierce, Waverly, Mass.
 1,155,644. Rubber shoe. J. T. Crowley, assignor to The Beacon Falls Rubber Shoe Co.—both of Beacon Falls, Conn.
 1,155,646. Hose clamp. F. P. D'Arcy, Kalamazoo, Mich.
 1,155,659. Catamantal belt of elastic webbing. E. Johnson, Cincinnati, Ohio.

- 1,155,693. Fountain pen. R. L. Warnock, Ohio.
 1,155,775. Inner tube for pneumatic tire. J. J. Voorhees, Jersey City, N. J., assignor to Brown Perfection Tube Co., New York, N. Y.
 1,155,848. Rectal syringe. C. A. Tyrrell, New York, N. Y.
 1,155,864. Corset with elastic inserts. A. Abt, assignor to The Warner Brothers Co.—both of Bridgeport, Conn.
 1,155,865. Elastic wheel. E. Aimond, Paris, France.
 1,155,874. Friction and metal plug for rubber heels and other tread surfaces. F. Berenstein, Chelsea, assignor of one-half to W. Bernstein, Boston—both in Mass.
 1,155,919. Tire deflating tool. W. C. Gunnell, Cadiz, Ohio.
 1,155,982. Attachable outer sole for boots and shoes. R. M. Withycombe, Sydney, New South Wales, Australia.

ISSUED OCTOBER 12, 1915.

- 1,156,054. Hot water bottle. W. M. Brown, Cambridge, Mass.
 1,156,099. Vehicle wheel. L. Risk, Waterloo, Iowa.
 1,156,153. Vehicle wheel having a solid rubber tire. R. Kronenberg, Ohligs, Germany.
 1,156,155. Vehicle tire. N. R. Landis, Portland, Ore.
 1,156,172. Bed pan constructed of rubber. I. Poindexter, Prineville, Ore.
 1,156,202. Breast shield. A. C. Barrett, Montgomery, Ala.
 1,156,238. Bathing cap. I. W. Litchfield, Newton, Mass.
 1,156,242. Cushion wheel. C. T. Miller, Menard, Ill.
 1,156,268. Combined tire valve and pressure gage. O. F. R. Bromberg, San Diego, Cal.
 1,156,278. Vacuum horseshoe. J. M. Dove, assignor to C. P. Dryden—both of Chicago, Ill.
 1,156,293. Recoil pad for guns having a soft rubber cushion. W. R. Jorgenson, Chicago, Ill.
 1,156,328. Pressure regulating device for tire valves. C. H. Thayer, assignor of one-fourth to G. P. Ransom, one-fourth to G. A. Gucker, and one-fourth to M. L. Sullivan—all of Elmira, N. Y.
 1,156,393. Elastic garter. A. P. Coolbroth, Cambridge, Mass.
 1,156,487. Hat or cap band with section of elastic. S. Kunstadter, Chicago, Ill.
 1,156,523. Invalid cushion having an inflatable cushion body. J. A. Clemens, assignor to Davol Rubber Co.—both of Providence, R. I.
 1,156,706. Hose rack. C. Nuhring, Cincinnati, Ohio.
 1,156,719. Float valve mechanism with an inflated rubber bag. R. L. Stokes, assignor to W. H. Darrow—both of Cincinnati, Ohio.
 1,156,740. Blanket holder including a strip of elastic material. C. M. Berdan, Maywood, N. J.
 1,156,748. Spring and presser bar for fountain pens. E. F. Britten, Jr., Jersey City, New Jersey, assignor to L. E. Waterman Co., New York, N. Y.
 1,156,749. Life saving belt or buoy. J. Brown, Liverpool, England.
 1,156,808. Bust reducer. Brassiere. M. Perillat, assignor to Ye Lady's Outfitterie—both of New York, N. Y.
 1,156,835. Elastic garment supporter. D. G. Butts, assignor to The Ivory Garter Co.—both of New Orleans, La.
 1,156,862. Pneumatic tire gage. R. C. Sibley, Boston, Mass.

Reissue.

- 13,993. Tennis shoe. N. E. Tousley, Watertown, and C. H. Roper, Belmont, assignors to Hood Rubber Co., Watertown—all in Massachusetts.

UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1914.

*Denotes Patents for American Inventions.

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 13, 1915.]
 12,230 (1914). Reservoir pen. F. Raveau, 52 Faubourg Poissonnière, Paris.
 12,262 (1914). Device for marking boxes, etc., comprising a cylinder containing rubber. H. A. Wiseman, 149 Holsworth Square, Gray's Inn Road, London.
 *12,271 (1914). India rubber. F. V. O'Neill, 117 Draper street, Dorchester District, Boston, Massachusetts, U. S. A.
 12,278 (1914). Wheel tire. S. E. Page, 27 Chancery Lane, London.
 12,306 (1914). Spring wheel with pneumatic cushion. R. T. Park, 137 York street, South Melbourne, Victoria, Australia.
 12,363 (1914). Tire attachment to rim. T. Dunn, 8 Sherwood street, Piccadilly Circus, London.
 12,366 (1914). Fabric used in the manufacture of hose. W. J. Mellersh-Jackson, 28 Southampton Buildings, London.
 12,419 (1914). Diving dress. Neufeldt & Kuhnke, Werk Ravensberg, am Habeburger Ring, Kiel, Germany.
 12,420 (1914). Diving suit. Neufeldt & Kuhnke, Werk Ravensberg, am Habeburger Ring, Kiel, Germany.]

- 12,421 (1914). Diving suit. W. P. Thompson, 6 Lord street, Liverpool.
 12,422 (1914). Diving suit. W. P. Thompson, 6 Lord street, Liverpool.
 12,440 (1914). Flexible tubing and hose made from a rubber substitute composition. K. A. Nestler and K. A. Gartner—both of Wiesa, Saxony, and I. Traube, 13A Am Lützow, Charlottenburg—both in Germany.
 12,500 (1914). Apparatus for detecting and closing punctures. F. W. Farr, 30 Bridge street, Northampton.
 12,581 (1914). Ornamental belt and lining attached to garments by a rubber solution instead of stitching. A. M. Purce, White House, Randalstown, Antrim, Ireland.
 12,588 (1914). Brace or suspender having a number of elastic parts. H. Carhartt, 32A Hope street, Liverpool.
 *12,632 (1914). Cover for wheel tire. J. D. Tew, 87 Rose avenue, Akron, Ohio, U. S. A.
 12,663 (1914). Tire attachment to rim. C. J. Walker, The Tannery, St. James' Road, Northampton.
 12,665 (1914). Rubber tire with a converging tread. M. Mettler, 34 Kochstrasse, Leipzig, Germany.
 12,743 (1914). Siphon bottle with hard rubber stem. O. L. Eugster, British Syphon Mfg. Co., Barnsbury street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 22, 1915.]

- 12,837 (1914). Reservoir pen. Klio-Werk Fabrik für Gebrauchsgegenstände Ges. Hennef-on-Sieg, Germany.
 12,884 (1914). Ball. P. A. Martin, 31 Westfield Road, Edgbaston, and J. Stanley, 70 Ivor Road, Sparkhill—both in Birmingham.
 12,902 (1914). Window casing made of rubber. E. K., W. P. and S. J. Bedington—all of 45 Northwood street, Birmingham.
 12,919 (1914). Golf ball. A. E. Terry, Novelty Works, Redditch.
 12,939 (1914). Wheel tire. G. Soper, High River, Brandt, Alberta, Canada.
 13,000 (1914). Wearing apparel having rubber faced seams. I. Frankenburg & Sons, I. Frankenburg and J. Caseman—all of Greengate Rubber Works, Salford, Lancashire.
 13,003 (1914). Stuffing box packing comprising cotton fibre which is treated with rubber solution and vulcanized. Puritas Disinfectants Co., Evington Valley Road, and H. C. Rought, 39 Evington Valley Road, Leicester.
 13,009 (1914). Gramophones in which rubber tubing rings are used. H. D. and A. Taylor—both of Buckingham Works, Bishop-hill, York.
 13,072 (1914). Photographic and like films containing rubber. J. E. Brandenberger, Thion-les-Vosges, France.
 13,110 (1914). Jacket and cover for wheel tire. T. R. Walton, 14 Spence Road, Walthamstow, London.
 *13,128 (1914). Rubber and leather compositions. E. B. Cook, 138 Holten street, Danvers, Massachusetts, U. S. A.
 13,142 (1914). Hypodermic syringe with rubber stopper. J. G. Castro, 3 Calle Tundidores, Granada, Spain.
 13,157 (1914). Fountain tooth brush. A. Binning, Hatfield, and T. L. Reeves, Mill Green, Hatfield, Hertfordshire.
 13,162 (1914). Tire valve. C. E. Baker, 34 Blue street, Carmarthen.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 29, 1915.]

- 13,376 (1914). Elastic hair binder. L. Lenton, Rockland Works, Eagle street, Coventry.
 *13,419 (1914). Spring wheel with continuous outer rigid ring. E. F. Krell, 11 Jones street, Detroit, Michigan, U. S. A.
 13,484 (1914). Rock drill with rubber pad. J. M. and J. L. Holman and J. L. Camborne, Cornwall.
 13,485 (1914). Taper holder with flexible air bulb. S. Carvin, 34 Boundary street, Liverpool.
 13,496 (1914). Pea shelling machine with two rubber covered rollers. E. L. Hunter, 131 Gilles street, and F. J. Sheridan, Harcourt Buildings, Victoria Place—both of Adelaide, South Australia.
 13,573 (1914). Soles and heels with springs embedded in rubber. A. G. and R. G. Doyle, 46 Newlands Park, Sydenham, London.
 13,589 (1914). Electrolysis; cells with ebonite frames. Soc. Anon. L'Oxydrique Française, 34 Rue Philippe de Girard, Paris.
 13,609 (1914). Siphon bottle with rubber washer. G. Götl, 24 Humboldtstrasse, Aussig-on-the-Elbe, Austria.
 13,640 (1914). Tire attachment to rims. Wolseley Tool & Motor Car Co., A. A. Remington, and J. G. Sweeney—all of Adcoley Park, Birmingham.
 13,761 (1914). Stocking protector of rubber. R. Molenkamp, 8 Rue Choron, Paris.
 13,775 (1914). Hydroplane with air bag. J. Buchanan, 6 Ravelston Park, Edinburgh.
 13,780 (1914). Spring wheel with pneumatic cushion. G. Singer, 15 Praterstrasse, Vienna, and R. Luzzato, 342 Commerciale, Trieste—both in Austria.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, AUGUST 19, 1915.]

- 36,057 (1914). Attachable rubber outer sole for boot and shoe. R. M. Withycombe, "Wyoming," Macquarie street, Sydney, N. S. W.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, SEPTEMBER 2, 1915.]

- 36,445 (1915). Elastic girth. A. C. Gull, Serpentine, Graziar and C. Watson, 82 Barrack street, Perth—both in West Australia.
 36,481 (1915). Preservation of pneumatic tire. E. Wood, 231 Elizabeth street, Melbourne, Victoria.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

- 287,618 (February 25, 1913). A steam or hot air bath that can be used in bed. Izso Gyenes Kavosvar, of Hungary. Represented by Messrs. J. Tannenbaum and Heinrich Heinmann, Patent lawyers, Berlin SW. 68.
 287,679 (November 12). Bed bath tub. Elizabeth Anna Mary Gallagher, New York City, U. S. A. Represented by E. Lamberts, Patent lawyer, Berlin SW. 61.
 287,753 (October 27, 1914). Process for manufacturing field gray waterproof tent cloth. Hüsey and Künzli, Säckingen-on-the-Rhine.
 287,787 (September 4, 1912). Process for manufacturing a rubber-like substance. Badische Anilin- und Soda-Fabrik, Ludwigshafen-on-the-Rhine.
 287,919 (July 10, 1914). Anti-skid protector for motor vehicle tires. Bernhard Greiff, Berger Ufer 2a, Düsseldorf.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 476,052 (August 19, 1914). Lever for adjusting tire casing patches. F. Russell.
 476,208 (April 9). Improved wheels for agricultural and road tractors, and similar machines. M. Landrin.
 476,292 (October 14). Heel with rotary metal piece. E. Le Roy.
 476,351 (October 20). Improved rims for elastic wheels. G. Miller.
 476,359 (October 22). Improvement to flexible parts, especially those for fastening auxiliary tires and anti-skid treads over tires of vehicle wheels. The Aston Chain & Hook Co.
 476,418 (October 31). Reliner for pneumatic tires. A. F. Tiedge.

TRADE MARKS.

- 87,066. J. W. Buckley Rubber Co., New York, N. Y. The word *Bucko*. For rubber hose, rubber belting, rubber packing, etc.
 87,254. The Mechanical Rubber Co., Jersey City, N. J. The planet Saturn with its ring and the word *Saturn*. For machinery packing composed of rubber or rubber compound.

DESIGNS.

- 47,861. Rubber boot. F. E. Payne, assignor to The Goodyear Rubber Co.—both of Middletown, Conn.
 47,872. Pneumatic tire tread. P. B. Rosworth, assignor to The Victor Rubber Co.—both of Springfield, Ohio.
 47,873. Vehicle tire. W. F. Bowers, San Francisco, Cal.
 47,874. Container for hot water bottles and fountain syringes. L. L. Britton, Denver, Colo.
 47,875. Vehicle tire. J. Christy, Cleveland, assignor to The Portage Rubber Co., Barberton—both in Ohio.
 47,876. Vehicle tire. J. Christy, Cleveland, assignor to The Portage Rubber Co., Barberton—both in Ohio.
 47,877. Deflating implement. C. E. Delaplain, Jacksonville, Ill.
 47,890. Vehicle wheel tire. E. C. May, Edmonton, Alberta, Canada.
 47,892. Tread for tire. J. Hauvette-Michelin, New Brunswick, assignor to Michelin Tire Co., Milltown—both in New Jersey.
 47,933. Rubber shoe. F. E. Payne, assignor to The Goodyear Rubber Co.—both of Middletown, Conn.
 47,944. Tire. H. C. Arnold, Malden, Mass.
 47,947. Tire casing. J. H. Christian, Detroit, Mich.
 47,963. Rubber tire tread. N. J. and F. Mooney—both of San Francisco, Cal.
 47,969. Tire tread. D. Spence, Norwalk, Conn.
 47,972. Tire tread. R. F. Teall, assignor to The Toledo Ford-Tire Co.—both of Toledo, Ohio.

RUBBER INDUSTRY IN NICARAGUA.

For a long time rubber gathering was the chief resource of eastern Nicaragua, but this industry was very injuriously affected by the development of Far Eastern plantations and the consequent fall in rubber prices. The lower cost of plantation rubber finally ruined the Nicaraguan industry, though it was not until 1913 and 1914 that this trade was seriously affected. Up to that time it is estimated that as many as 4,000 workers were engaged in gathering rubber on the eastern coast of Nicaragua. The average result of a day's labor was from four to five pounds per man, for which the laborer received 40 cents gold per pound. In 1914 practically all of this labor was left unemployed and the merchants lost their principal means of establishing foreign credit balances. In 1910, the exports of crude rubber from Nicaragua amounted in value to \$280,876; in 1911, to \$214,960; in 1912, to \$207,748; in 1913, to \$96,471; while in 1914, these exports only amounted to \$48,776. In 1910 prices were as high as \$1.30 per pound. Today they vary from 18 to 25 cents per pound.

Review of the Crude Rubber Market.

NEW YORK.

OCTOBER 30, 1915.

A FAIRLY good business was done in spot and December-January futures during October. Prices did not change materially. First latex spot sold for 61 cents, and Upriver fine for 54¼ cents on the first of the month. On October 30 First latex was 61½ cents and Upriver fine 58¾ cents.

The announcement of the new Ceylon export tax only resulted in minor and temporary fluctuations. The impression is that the other rubber producing colonies in the Far East will not impose a new tax on rubber exports.

The unstable condition of exchange had a tendency to lower values, but this was overcome by the firmness of the market. Future buying has been mostly confined to January-March deliveries and therefore orders for the greater part of next year's supplies are yet to be placed. This condition is caused by the small difference in present prices for forward sales. On October 29, First latex, January-March delivery, was 59¼ cents, and January-June delivery, 59½ cents.

The future of Singapore as an important rubber market now seems assured. The large rubber manufacturers and dealers are establishing offices or agencies in that city. It is significant that in August 2,110 tons of rubber arrived in New York, shipped direct from Singapore and Colombo, while shipments from London and Liverpool were 1,996 tons for the same period.

The steamship "Indrawaddy," sailing from Singapore direct to New York with 1,000 tons of rubber, put in at Colombo with fire in her hold. She is expected to arrive in New York, November 20, three weeks late. The Booth steamship "Denis" from Pará and Manáos with 180 tons is now due. The Lloyd Brasileiro steamship "Rio de Janeiro" from Pará, was due October 30, with 235 tons.

Shipments of rubber invoiced through the American Consul at London for the United States during the nine months ending September 30, 1915, were valued at \$43,080,562, compared with \$25,303,056 for the same period in 1914.

LONDON.

The market for the first week in October was active, due to American buying, and prices advanced. Spot and October crêpe brought 2s. 6d. Smoked sheet 2s. 5¼d., and hard fine Pará was quoted at 2s. 5d. November-December crêpe was marked 2s. 5¼d., and January-June, 1916, 2s. 4¼d.

The market continued quiet with prices steady, supported by moderate buying. On October 21, spot crêpe and smoked sheet ribbed were both quoted at 2s. 4¼d.; November-December, 2s. 4½d.; January-June, 2s. 4¼d.

Forward contracts for delivery in 1916 are going at 2s. 2d. (52.7 cents) and 2s. 4d. (56.7 cents) and it is reported that a large number of sales covering the greater part of next year have been made on the basis of these figures. Such contracts have been made with the planters, shipments to be made direct to New York.

MANAOS.

The general demand at this point is good and the market is steady. Stocks are not accumulating as might be expected at this time of year. Apparently there has been heavy selling of futures. Upper Caucho ball is in good demand at firm prices. July and August, generally quiet months, showed unusual arrivals. The receipts are expected to continue in good volume until the close of the present year. Under these circumstances prices are not expected to advance unless stimulated by European demand.

BATAVIA, JAVA.

Private auctions were held at Batavia on August 17, Septem-

ber 17 and October 18. No. 1 crêpe brought 61 cents per pound. Private auctions will be held on November 19 and December 17.

SINGAPORE.

At the auction held on September 1, 1915, 234 tons were offered and 176 tons changed hands. Pale crêpe and ribbed sheet sold for \$131 [\$73.36 United States currency] and \$129 [\$72.24 United States currency] respectively per picul (133½ pounds).

At the auction held on September 8, 225 tons were offered and 155 tons sold. There was a demand for Pale crêpe which readily brought \$133 [\$74.48 United States currency] per picul.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and October 30, the current date:

| PARA. | Nov. 1, '14. | Oct. 1, '15. | Oct. 30, '15. |
|---|--------------|--------------|---|
| Upriver, fine, new..... | 65 @66 | 54½ @55 | 56 @57 |
| Upriver, fine, old..... | 67 @69 | 56 @57 | 57 @58 |
| Islands, fine, new..... | 50 @52 | 50 @51 | 54 @ |
| Islands, fine, old..... | 52 @53 | 52 @ | 55 @ |
| Upriver, coarse, new..... | 47 @48 | 41½ @42 | 44 @44½ |
| Upriver, coarse, old..... | 43 @ | 43 @ | 45 @ |
| Islands, coarse, new..... | 27 @28 | 26 @27 | 27 @27½ |
| Islands, coarse, old..... | 28 @ | 28 @ | 28 @ |
| Cameta..... | 30 @31 | 27½ @28 | 28 @29 |
| Caucho, ball, upper..... | 46 @47 | 42½ @ | 44 @45 |
| Caucho, ball, lower..... | 41 @43 | 40 @41 | 42 @43 |
| PLANTATION HEVEA. | | | |
| Smoked sheet ribbed..... | 65 @66 | 59½ @ | { Spot.....61½ @62 { Jan.-June.60 @60½ |
| First latex crêpe { Near by 61 @63 } 59½ @60 { Spot.....61½ @62 { Forward 60 @61 } { Jan.-June.60 @60½ | | | |
| Fine sheets and biscuits, unsmoked..... | 60 @61 | 57 @57½ | 58 @58½ |
| CENTRALE. | | | |
| Corinto..... | 45 @46½ | 39 @40 | 41 @42 |
| Esmeralda, sausage..... | 44 @45 | 38½ @39 | 41 @42 |
| Nicaragua, scrap..... | 44 @45 | 38½ @39 | 40 @41 |
| Mexican plantation, sheet.. | 37 @39 | ..... | ..... |
| Mexican, scrap..... | 40 @42 | 39 @40 | 42 @ |
| Mexican, slab..... | ..... | ..... | 30 @ |
| Manicoba..... | ..... | 33 @36 | 32 @39 |
| Mangabeira, sheet..... | 40 @43 | 32 @38 | 32 @38 |
| Guayule..... | 26 @30 | ..... | 32½ @ |
| Balata, sheet..... | 51 @52 | 51 @52 | 52½ @53 |
| Balata, block..... | 43 @44 | 43 @ | 44 @45 |
| AFRICAN. | | | |
| Lopori, ball, prime..... | 52 @55 | 52 @53 | 53 @54 |
| Upper Congo, ball, red.... | ..... | 50 @57 | 52 @ |
| Massai, red..... | 54 @58 | 51 @52½ | 52 @ |
| Soudan Niggers..... | ..... | 44 @45 | ..... |
| Cameroon, ball..... | 44 @45 | ..... | ..... |
| Benguela..... | 31 @33 | 31 @32 | 32 @ |
| Accra, flake..... | 25 @26 | 24 @25 | ..... |
| Rio Nunez Niggers..... | ..... | 53 @53½ | 53 @ |
| Konakry Niggers..... | ..... | 51 @52 | 53 @ |
| EAST INDIAN. | | | |
| Assam..... | 54 @58 | 45 @47 | 47 @ |
| Pontianak..... | 8 @ 9 | 6¼ @ 7 | 6¼ @ |
| Gutta Siak..... | ..... | 11½ @12 | 11½ @12 |
| Borneo II..... | 35 @ | ..... | ..... |
| Gutta Percha..... | ..... | 2.00 @2.40 | 2.50 @ |

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"The demand for commercial paper has continued good through October, as for several months past, and the best rubber names have been taken freely at 4@4½ per cent., and those not so well known 5@5½ per cent., the latter mostly by out-of-town banks."

NEW YORK PRICES FOR SEPTEMBER (NEW RUBBER).

| | 1913. | 1914. | 1915. |
|----------------------|--------------|--------------|--------------|
| Upriver, fine..... | \$0.80 @0.90 | \$0.64 @0.78 | \$0.55 @0.57 |
| Upriver, coarse..... | .48 @.52 | .43 @.55 | .41 @.43 |
| Islands, fine..... | .71 @.77 | .53 @.70 | .49 @.51 |
| Islands, coarse..... | .28 @.31 | .27 @.35 | .26 @.27 |
| Cameta..... | .36 @.39 | .29 @.36 | .28 @.30 |

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weights in Pounds.]

SEPTEMBER 23.—By the steamer *Acre* from Pará:

| | Fine. | Medium. | Coarse. | Caucho. | Total. |
|---------------------------|---------|---------|---------|---------|---------|
| Meyer & Brown..... | 70,200 | 1,900 | 26,200 | 35,900= | 134,200 |
| Henderson & Korn..... | 195,300 | | 4,800 | | 200,100 |
| Arnold & Zeiss..... | 106,900 | 16,900 | 11,200 | | 142,100 |
| Neuss, Hesslein & Co..... | 41,200 | | | | 41,200 |
| H. A. Astlett & Co..... | 600 | 2,300 | 10,100 | 3,100= | 16,100 |
| Muller, Schall & Co..... | 4,300 | | 300 | 9,200= | 13,800 |
| General Rubber Co..... | 3,200 | 300 | 100 | | 3,600 |
| W. R. Grace & Co..... | 1,400 | | | | 1,400 |
| Total..... | 227,800 | 216,700 | 52,700 | 55,300= | 552,500 |

OCTOBER 2.—By the steamer *Francis* from Pará and Manaós:

| | | | | | |
|------------------------------|---------|--------|---------|---------|---------|
| Meyer & Brown..... | 20,900 | 5,600 | 67,200 | 23,100= | 116,800 |
| Arnold & Zeiss..... | 34,100 | 2,500 | 46,000 | 5,700= | 88,300 |
| H. A. Astlett & Co..... | 26,300 | 3,800 | 17,700 | 22,500= | 70,300 |
| G. Amsinck & Co..... | 32,300 | 1,000 | 7,800 | | 41,100 |
| Henderson & Korn..... | 1,800 | 4,500 | 29,900 | 4,200= | 40,400 |
| J. T. Johnstone & Co..... | | | 17,200 | 21,500= | 38,700 |
| Robert Badenhop..... | 7,500 | 700 | 700 | | 8,900 |
| General Rubber Co..... | 1,300 | 100 | 3,100 | | 4,500 |
| Aldens' Successors, Ltd..... | 700 | 700 | 2,700 | | 4,100 |
| Total..... | 124,900 | 18,900 | 192,300 | 77,000= | 413,100 |

OCTOBER 13.—By the steamer *Atahualpa*, from Iquitos:

| | Fine. | Medium. | Coarse. | Caucho. | Total. |
|--|---------|---------|---------|---------|---------|
| Meyer & Brown..... | 9,700 | 1,100 | 3,100 | 17,600= | 31,500 |
| H. Kupper..... | 49,000 | 800 | 10,000 | 28,300= | 88,100 |
| W. R. Grace & Co..... | 29,700 | 400 | 9,300 | 8,500= | 47,900 |
| H. A. Astlett & Co..... | 24,800 | 1,200 | 3,200 | 9,100= | 38,300 |
| G. Amsinck & Co..... | 7,200 | | 2,500 | 5,100= | 14,800 |
| Rumsey & Greutert Co., Inc..... | 2,900 | | 900 | 1,300= | 5,100 |
| Chartered Bank of Spanish America..... | 2,100 | | 300 | | 2,400 |
| Total..... | 125,400 | 3,500 | 29,300 | 69,900= | 228,100 |

OCTOBER 13.—By the steamer *Atahualpa*, from Pará and Manaós:

| | Fine. | Medium. | Coarse. | Caucho. | Total. |
|------------------------------|---------|---------|---------|----------|-----------|
| Meyer & Brown..... | 117,800 | 16,300 | 60,400 | 39,800= | 234,300 |
| Arnold & Zeiss..... | 119,800 | 9,600 | 25,400 | 95,100= | 249,900 |
| General Rubber Co..... | 124,900 | 16,100 | 41,500 | 4,300= | 186,800 |
| Robinson & Co..... | 147,600 | 300 | 20,200 | | 168,100 |
| H. A. Astlett & Co..... | 86,700 | 7,400 | 42,000 | 300= | 136,400 |
| Henderson & Korn..... | 46,100 | 6,700 | 1,500 | 18,000= | 72,300 |
| Adolph Hirsch & Co..... | 21,800 | | | | 21,800 |
| G. Amsinck & Co..... | 3,600 | | 9,600 | | 13,200 |
| Hagemeyer & Brunn..... | | | | 14,300= | 14,300 |
| Aldens' Successors, Ltd..... | | 2,500 | 7,700 | | 10,200 |
| Cowdrey & Co..... | 5,700 | 800 | 2,100 | 100= | 8,700 |
| Total..... | 674,000 | 59,700 | 210,400 | 171,900= | 1,116,000 |

OCTOBER 18.—By the steamer *Seigipe*, from Pará:

| | Fine. | Medium. | Coarse. | Caucho. | Total. |
|------------------------------|---------|---------|---------|---------|---------|
| Meyer & Brown..... | 42,800 | 3,200 | 35,000 | 15,700= | 96,700 |
| Arnold & Zeiss..... | 107,500 | 9,900 | 32,800 | 15,000= | 165,200 |
| H. A. Astlett & Co..... | 19,700 | 20,600 | 75,500 | 13,300= | 129,100 |
| J. T. Johnstone & Co..... | 58,300 | 5,400 | 30,000 | | 93,700 |
| General Rubber Co..... | 32,100 | 6,300 | 13,200 | 3,400= | 55,000 |
| Neuss, Hesslein & Co..... | 23,700 | | 4,000 | 19,700= | 47,400 |
| G. Amsinck & Co..... | 26,400 | 1,400 | 8,000 | 1,300= | 37,100 |
| W. R. Grace & Co..... | 7,700 | | 2,500 | 10,000= | 20,200 |
| W. G. Ryckman..... | 12,100 | | | | 12,100 |
| Aldens' Successors, Ltd..... | | 3,500 | 3,900 | | 7,400 |
| Total..... | 330,300 | 50,300 | 204,900 | 78,400= | 663,900 |

PARA RUBBER VIA EUROPE.

| | Pounds. | Pounds. |
|---|---------|---------|
| SEPTEMBER 25.—By the <i>Advance</i> =Colon: | | |
| G. Amsinck & Co. (Caucho)..... | 9,500 | |
| W. R. Grace & Co. (Fine)..... | 5,000 | |
| W. R. Grace & Co. (Coarse)..... | 7,000 | 21,500 |
| OCTOBER 4.—By the <i>Motura</i> =Bolivar: | | |
| Yglesias, Lobo & Co. (Fine)..... | 25,000 | |
| Yglesias, Lobo & Co. (Coarse)..... | 10,000 | 35,000 |
| OCTOBER 13.—By the <i>Colon</i> =Colon: | | |
| G. Amsinck & Co. (Caucho)..... | 36,000 | |
| OCTOBER 13.—By the <i>Hesperides</i> =Montevideo: | | |
| Rubber & Guayule Agency, Inc. (Fine)..... | 16,000 | |
| Rubber & Guayule Agency, Inc. (Coarse)..... | 3,000 | |
| G. Amsinck & Co. (Fine)..... | 2,000 | 21,000 |
| OCTOBER 23.—By the <i>Justin</i> =Para: | | |
| Meyer & Brown (Fine)..... | 61,200 | |
| Meyer & Brown (Medium)..... | 5,900 | |
| Meyer & Brown (Coarse)..... | 3,100 | |
| Meyer & Brown (Caucho)..... | 2,100 | |
| General Rubber Co. (Coarse)..... | 2,600 | |
| Aldens' Successors, Ltd. (Medium)..... | 1,600 | |
| Aldens' Successors, Ltd. (Coarse)..... | 600 | 77,100 |

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

| | | |
|---|---------|--------|
| SEPTEMBER 24.—By the <i>Santa Maria</i> =Cartagena: | | |
| G. Amsinck & Co..... | 5,500 | |
| SEPTEMBER 25.—By the <i>Advance</i> =Colon: | | |
| G. Amsinck & Co..... | 7,500 | |
| Lawrence Johnson & Co..... | 2,700 | |
| Dumarest Bros..... | 1,000 | |
| Piza, Nephews & Co..... | 8,000 | |
| Pottberg, Ebeling & Co..... | 1,500 | 20,700 |
| SEPTEMBER 25.—By the <i>San Jacinto</i> =Galveston: | | |
| Various..... | 60,000 | |
| SEPTEMBER 25.—By the <i>Santiago</i> =Mexico: | | |
| American Trading Co..... | 21,000 | |
| Harburger & Stack..... | 3,000 | |
| G. Amsinck & Co..... | 1,500 | |
| J. S. Sembrada & Co..... | 500 | |
| H. Marquardt & Co..... | 500 | 26,500 |
| SEPTEMBER 27.—By the <i>Morro Castle</i> =Mexico: | | |
| Lawrence Johnson & Co..... | 20,000 | |
| Various..... | 1,000 | 21,000 |
| SEPTEMBER 27.—By the <i>Byron</i> =Bahia: | | |
| Adolph Hirsch & Co..... | 110,000 | |

POUNDS.

| | | |
|--|--------|--------|
| SEPTEMBER 29.—By the <i>Metapan</i> =Port Limon: | | |
| Isaac Brandon & Bros..... | 1,000 | |
| SEPTEMBER 30.—By the <i>Tocantins</i> =Bahia: | | |
| Adolph Hirsch & Co..... | 30,000 | |
| SEPTEMBER 30.—By the <i>Croale</i> =New Orleans: | | |
| E. Steiger & Co..... | 4,500 | |
| SEPTEMBER 30.—By the <i>Panama</i> =Colon: | | |
| G. Amsinck & Co..... | 10,600 | |
| American Trading Co..... | 2,500 | |
| C. E. Griffin..... | 3,000 | |
| Muller, Schall & Co..... | 2,400 | |
| Andean Trading Co..... | 1,000 | |
| R. G. Barthold..... | 300 | 19,800 |
| OCTOBER 4.—By the <i>Yumuri</i> =Mexico: | | |
| E. Steiger & Co..... | 12,000 | |
| Harburger & Stock..... | 3,500 | 15,500 |
| OCTOBER 4.—By the <i>Tivies</i> =Puerto Barrios: | | |
| J. S. Sembrada & Co..... | 1,000 | |
| Rosenthal & Sons..... | 2,500 | 3,500 |
| OCTOBER 5.—By the <i>Pastores</i> =Port Limon: | | |
| A. A. Linde & Co..... | 1,300 | |
| Isaac Brandon & Bros..... | 200 | 1,500 |
| OCTOBER 7.—By the <i>Alliance</i> =Colon: | | |
| G. Amsinck & Co..... | 5,500 | |
| Muller, Schall & Co..... | 2,200 | 7,700 |
| OCTOBER 8.—By the <i>Scottish Prince</i> =Bahia: | | |
| Adolph Hirsch & Co..... | 25,000 | |
| J. H. Rosbach Bros..... | 42,500 | 67,500 |
| OCTOBER 11.—By the <i>Mexico</i> =Mexico: | | |
| H. Marquardt & Co..... | 3,500 | |
| Diez & Co..... | 1,000 | |
| Graham, Hinkley & Co..... | 600 | |
| Lucas Deschamps..... | 500 | |
| G. Amsinck & Co..... | 300 | 5,900 |
| OCTOBER 13.—By the <i>Calamares</i> =Port Limon: | | |
| Isaac Brandon & Bros..... | 1,500 | |
| Graham, Hinkley & Co..... | 200 | 1,700 |
| OCTOBER 13.—By the <i>El Valle</i> =Galveston: | | |
| Various..... | 56,000 | |
| OCTOBER 13.—By the <i>Colon</i> =Colon: | | |
| G. Amsinck & Co..... | 12,900 | |
| A. M. Capen's Sons..... | 1,600 | |
| J. S. Sembrada & Co..... | 500 | |
| Herman Wolff..... | 1,300 | |
| Goutard & Co..... | 7,500 | |
| American Trading Co..... | 1,800 | |
| A. Angel & Co..... | 600 | |
| Meck & Co..... | 2,600 | 28,800 |

OCTOBER 15.—By the *Carrillo*=Cartagena:

| | | |
|--|-------|-------|
| International Banking Corporation..... | 1,000 | |
| G. Amsinck & Co..... | 200 | 1,200 |

OCTOBER 18.—By the *Momus*=New Orleans:

| | | |
|--------------------|-------|--|
| A. N. Rotholz..... | 4,000 | |
|--------------------|-------|--|

OCTOBER 18.—By the *Sisalo*=Cortez:

| | | |
|--------------------------|-------|-------|
| A. Rosenthal & Sons..... | 3,500 | |
| Eggers & Heinlein..... | 1,800 | |
| J. S. Sembrada & Co..... | 800 | |
| G. Amsinck & Co..... | 300 | |
| R. G. Barthold..... | 100 | 5,700 |

OCTOBER 19.—By the *Tenadores*=Port Limon:

| | | |
|-----------------------|-------|-------|
| A. A. Linde & Co..... | 1,200 | |
| A. Held..... | 300 | 1,500 |

OCTOBER 10.—By the *Terence*=Bahia:

| | | |
|-------------------------|--------|--|
| Adolph Hirsch & Co..... | 12,000 | |
|-------------------------|--------|--|

OCTOBER 19.—By the *Esperanza*=Mexico:

| | | |
|----------------------------|-------|-------|
| H. Marquardt & Co..... | 4,000 | |
| J. A. Medina..... | 3,000 | |
| Graham, Hinkley & Co..... | 500 | |
| Lawrence Johnson & Co..... | 300 | 7,800 |

OCTOBER 21.—By the *Santa Maria*=Cartagena:

| | | |
|----------------------|-------|--|
| G. Amsinck & Co..... | 3,000 | |
|----------------------|-------|--|

OCTOBER 23.—By the *Advance*=Colon:

| | | |
|----------------------------|-------|--------|
| Lawrence Johnson & Co..... | 9,400 | |
| G. Amsinck & Co..... | 3,700 | 13,100 |

OCTOBER 23.—By the *Concho*=Galveston:

| | | |
|--------------|--------|--|
| Various..... | 56,000 | |
|--------------|--------|--|

AFRICANS.

| | | |
|--|---------|--------|
| SEPTEMBER 23.—By the <i>St. Cecilia</i> =London: | | |
| General Rubber Co..... | 12,500 | |
| SEPTEMBER 27.—By the <i>Mississippi</i> =London: | | |
| Henderson & Korn..... | 11,200 | |
| SEPTEMBER 27.—By the <i>Idaho</i> =Hull: | | |
| Aldens' Successors, Ltd..... | 80,000 | |
| OCTOBER 4.—By the <i>Agamemnon</i> =Lisbon: | | |
| Meyer & Brown..... | 22,500 | |
| S. R. Sequerra..... | 22,500 | |
| Robert Badenhop..... | 11,200 | 56,200 |
| OCTOBER 4.—By the <i>Quebra</i> =Liverpool: | | |
| Goodyear Tire & Rubber Co..... | 22,500 | |
| OCTOBER 5.—By the <i>Buffalo</i> =Hull: | | |
| Aldens' Successors, Ltd..... | 100,000 | |

POUNDS.

OCTOBER 6.—By the *Norseman*—Liverpool:

| | |
|--------------------|--------|
| Rubber Trading Co. | 21,000 |
| Various | 1,500 |
| | 22,500 |

OCTOBER 11.—By the *Georgic*—Liverpool:

| | |
|--------------------------|--------|
| Aldens' Successors, Ltd. | 70,000 |
| Henderson & Korn | 12,000 |
| | 82,000 |

OCTOBER 21.—By the *Orduna*—Liverpool:

| | |
|-----------------|--------|
| Robert Badenhop | 13,500 |
|-----------------|--------|

EAST INDIAN.

[*Denotes plantation rubber.]

SEPTEMBER 23.—By the *St. Cecilia*—London:

| | |
|--------------------------|----------|
| General Rubber Co. | *360,000 |
| The B. F. Goodrich Co. | *325,000 |
| L. Littlejohn & Co. | *132,329 |
| Aldens' Successors, Ltd. | *35,000 |
| Rubber Trading Co. | *35,000 |
| J. T. Johnstone & Co. | *33,500 |
| Robinson & Co. | *11,200 |
| Various | *2,671 |
| | *934,700 |

SEPTEMBER 25.—By the *City of Naples*—Singapore:

| | |
|-----------------------------|------------|
| L. Littlejohn & Co. | *159,680 |
| Henderson & Korn | 160,000 |
| General Rubber Co. | *175,000 |
| Arnold & Zeiss | 25,000 |
| Charles T. Wilson Co., Inc. | *45,000 |
| Robert Badenhop | *45,000 |
| Hood Rubber Co. | *5,500 |
| Edward Maurer & Co., Inc. | *13,500 |
| Goodyear Tire & Rubber Co. | *90,000 |
| The B. F. Goodrich Co. | *200,000 |
| Various | *85,320 |
| | *1,004,000 |

SEPTEMBER 27.—By the *Kumeric*—Colombo:

| | |
|-----------------------|----------|
| Meyer & Brown | *125,000 |
| L. Littlejohn & Co. | *104,390 |
| General Rubber Co. | *22,500 |
| J. T. Johnstone & Co. | *30,000 |
| W. R. Grace & Co. | *13,500 |
| Arnold & Zeiss | *50,000 |
| W. H. Stiles | *40,000 |
| Henderson & Korn | *30,000 |
| Various | *88,610 |
| | *504,000 |

SEPTEMBER 27.—By the *City of Bristol*—Singapore:

| | |
|-----------------------------|------------|
| Arnold & Zeiss | *45,000 |
| L. Littlejohn & Co. | *232,600 |
| Henderson & Korn | *130,000 |
| Core & Herbert | *33,500 |
| Rumsey & Greutert Co., Inc. | *56,000 |
| W. R. Grace & Co. | *11,200 |
| J. T. Johnstone & Co. | *50,000 |
| The B. F. Goodrich Co. | *530,000 |
| Goodyear Tire & Rubber Co. | *50,000 |
| General Rubber Co. | *11,200 |
| Aldens' Successors, Ltd. | *2,200 |
| Various | *67,400 |
| | *1,219,100 |

SEPTEMBER 30.—By the *St. Patrick*—Colombo:

| | |
|----------------------------|----------|
| Meyer & Brown | *52,000 |
| L. Littlejohn & Co. | *67,730 |
| General Rubber Co. | *105,000 |
| Arnold & Zeiss | *14,000 |
| Goodyear Tire & Rubber Co. | *7,000 |
| Various | *18,770 |
| | *264,500 |

OCTOBER 1.—By the *Ternate*—Batavia:

| | |
|------------------------------------|------------|
| Meyer & Brown | *85,000 |
| Aldens' Successors, Ltd. | *100,000 |
| Rubber Trading Co. | *22,500 |
| G. Amainck & Co. | *20,000 |
| General Rubber Co. | *95,000 |
| Edward Maurer Co., Inc. | *115,000 |
| J. T. Johnstone & Co. | *10,000 |
| Manhattan Rubber Manufacturing Co. | *27,000 |
| Goodyear Tire & Rubber Co. | *90,000 |
| L. Littlejohn & Co. | *7,733 |
| Various | *642,267 |
| | *1,314,500 |

OCTOBER 4.—By the *Ardgryfe*—London:

| | |
|-----------------------------|----------|
| General Rubber Co. | *290,000 |
| The B. F. Goodrich Co. | *260,000 |
| L. Littlejohn & Co. | *12,949 |
| J. T. Johnstone & Co. | *22,500 |
| Charles T. Wilson Co., Inc. | *22,500 |
| Robert Badenhop | *22,500 |
| Rubber Trading Co. | *13,000 |
| Arnold & Zeiss | *6,700 |
| Robinson & Co. | *22,500 |
| Aldens' Successors, Ltd. | *4,500 |
| Rumsey & Greutert Co., Inc. | *3,500 |
| | *680,649 |

OCTOBER 7.—By the *Saxon Monarch*—London:

| | |
|-----------------------------|----------|
| General Rubber Co. | *60,000 |
| Aldens' Successors, Ltd. | *180,000 |
| The B. F. Goodrich Co. | *315,000 |
| L. Littlejohn & Co. | *169,152 |
| Charles T. Wilson Co., Inc. | *45,000 |
| Rubber Trading Co. | *45,000 |
| Edward Maurer Co., Inc. | *30,000 |
| J. T. Johnstone & Co. | *6,500 |
| Rumsey & Greutert Co., Inc. | *6,500 |
| | *857,152 |

OCTOBER 8.—By the *Egremont Castle*—Singapore:

| | |
|-----------------------------|------------|
| Henderson & Korn | *325,000 |
| L. Littlejohn & Co. | *359,160 |
| General Rubber Co. | *300,000 |
| The B. F. Goodrich Co. | *112,000 |
| Charles T. Wilson Co., Inc. | *45,000 |
| W. R. Grace & Co. | *70,000 |
| Robert Badenhop | *22,500 |
| W. R. Grace & Co. | *50,000 |
| Hood Rubber Co. | *5,000 |
| Goodyear Tire & Rubber Co. | *75,000 |
| J. T. Johnstone & Co. | *15,000 |
| Various | *150,840 |
| | *1,529,500 |

OCTOBER 8.—By the *City of Baroda*—Colombo:

| | |
|-----------------------|------------|
| Meyer & Brown | *302,000 |
| L. Littlejohn & Co. | *220,130 |
| W. H. Stiles | *100,000 |
| J. T. Johnstone & Co. | *30,000 |
| W. R. Grace & Co. | *12,500 |
| Hood Rubber Co. | *25,000 |
| Henderson & Korn | *60,000 |
| Robinson & Co. | *70,000 |
| Arnold & Zeiss | *170,000 |
| Various | *29,870 |
| | *1,019,500 |

OCTOBER 8.—By the *Lancastrian*—Liverpool:

| | |
|----------------------------|---------|
| Goodyear Tire & Rubber Co. | *30,000 |
|----------------------------|---------|

OCTOBER 9.—By the *Auchendale*—London:

| | |
|----------------------------|----------|
| Goodyear Tire & Rubber Co. | *112,000 |
| Edward Maurer Co., Inc. | *13,500 |
| | *125,500 |

OCTOBER 11.—By the *Saudon Hall*—Colombo:

| | |
|----------------------------|----------|
| Meyer & Brown | *90,000 |
| General Rubber Co. | *22,500 |
| L. Littlejohn & Co. | *150,240 |
| Arnold & Zeiss | *70,000 |
| Henderson & Korn | *55,000 |
| W. R. Grace & Co. | *11,200 |
| J. T. Johnstone & Co. | *22,500 |
| W. H. Stiles | *12,000 |
| Goodyear Tire & Rubber Co. | *6,000 |
| Rubber Trading Co. | *45,000 |
| Various | *19,760 |
| | *504,200 |

OCTOBER 14.—By the *Queen Margaret*—London:

| | |
|-------------------------------|------------|
| The B. F. Goodrich Co. | *480,000 |
| General Rubber Co. | *425,000 |
| Arnold & Zeiss | *80,000 |
| L. Littlejohn & Co. | *132,499 |
| J. T. Johnstone & Co. | *60,000 |
| Edward Maurer Co., Inc. | *60,000 |
| Rubber Trading Co. | *10,000 |
| Robinson & Co. | *33,500 |
| W. H. Stiles | *33,500 |
| Rubber & Guayule Agency, Inc. | *20,000 |
| Aldens' Successors, Ltd. | *6,700 |
| Various | *25,000 |
| | *1,366,199 |

OCTOBER 20.—By the *Prometheus*—Batavia:

| | |
|------------------------------------|------------|
| Meyer & Brown | *95,000 |
| Edward Maurer Co., Inc. | *112,000 |
| General Rubber Co. | *315,000 |
| Goodyear Tire & Rubber Co. | *70,000 |
| Manhattan Rubber Manufacturing Co. | *30,000 |
| G. Amainck & Co. | *11,200 |
| Rubber Trading Co. | *120,000 |
| J. T. Johnstone & Co. | *7,000 |
| L. Littlejohn & Co. | *28,080 |
| Various | *371,920 |
| | *1,160,200 |

OCTOBER 21.—By the *Aymeric*—Colombo:

| | |
|----------------------------|----------|
| Meyer & Brown | *11,200 |
| L. Littlejohn & Co. | *208,340 |
| Arnold & Zeiss | *60,000 |
| Henderson & Korn | *17,000 |
| W. H. Stiles | *35,000 |
| Goodyear Tire & Rubber Co. | *8,000 |
| | *359,540 |

OCTOBER 21.—By the *Ardgorm*—London:

| | |
|-----------------------------|----------|
| Meyer & Brown | *22,600 |
| Edward Maurer Co., Inc. | *25,000 |
| Goodyear Tire & Rubber Co. | *50,000 |
| General Rubber Co. | *135,000 |
| Charles T. Wilson Co., Inc. | *11,200 |
| L. Littlejohn & Co. | *33,400 |
| | *277,200 |

OCTOBER 23.—By the *Tronto*—London:

| | |
|-----------------------------|----------|
| Meyer & Brown | *22,500 |
| Aldens' Successors, Ltd. | *27,000 |
| The B. F. Goodrich Co. | *150,000 |
| J. T. Johnstone & Co. | *131,660 |
| L. Littlejohn & Co. | *105,000 |
| General Rubber Co. | *67,000 |
| Arnold & Zeiss | *17,000 |
| Rubber Trading Co. | *3,000 |
| Michelin Tire Co. | *10,000 |
| Rumsey & Greutert Co., Inc. | *7,500 |
| Various | *30,500 |
| | *571,160 |

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—AUGUST, 1915.

| Imports: | Pounds. | Value. |
|----------------------------|------------|-------------|
| India rubber | 16,286,888 | \$8,140,861 |
| Balata | 313,470 | 118,793 |
| Gutta percha | 134,698 | 15,278 |
| Gutta jelutong (Pontianak) | 1,276,088 | 57,041 |
| Total | 18,011,144 | \$8,331,973 |

| Exports: | Pounds. | Value. |
|--------------|---------|----------|
| Balata | 35,022 | \$13,258 |
| Rubber scrap | 110,014 | 12,789 |
| Total | 145,036 | \$26,047 |

PORT OF NEW YORK—SEPTEMBER, 1915.

| Imports: | Pounds. | Value. |
|----------------------------|------------|-------------|
| India rubber | 19,326,573 | \$9,718,540 |
| Balata | 73,885 | 29,457 |
| Gutta percha | 399,408 | 43,760 |
| Gutta jelutong (Pontianak) | 4,155,120 | 155,808 |
| Rubber scrap | 431,046 | 40,427 |
| Total | 24,386,032 | \$9,987,992 |

| Exports: | Pounds. | Value. |
|--------------|---------|----------|
| Balata | 45,487 | \$19,079 |
| Rubber scrap | 134,993 | 18,433 |
| Total | 180,480 | \$37,512 |

PORT OF CHICAGO—SEPTEMBER, 1915.

| Imports: | Pounds. | Value. |
|--------------|---------|---------|
| Rubber scrap | 64,979 | \$3,780 |

PORT OF CLEVELAND—SEPTEMBER, 1915.

| Imports: | Pounds. | Value. |
|------------------|---------|---------|
| Rubber scrap | 289 | \$15 |
| Exports: | Pounds. | Value. |
| Rubber reclaimed | 40,000 | \$2,038 |

PORT OF DETROIT—SEPTEMBER, 1915.

| Exports: | Pounds. | Value. |
|------------------|---------|---------|
| Rubber scrap | 6,016 | \$296 |
| Rubber reclaimed | 11,084 | 2,896 |
| Total | 17,100 | \$3,192 |

PORT OF NIAGARA FALLS—SEPTEMBER, 1915.

| Exports: | Pounds. | Value. |
|--------------|---------|----------|
| India rubber | 103,777 | \$53,731 |
| Rubber scrap | 41,700 | 1,851 |
| Total | 145,477 | \$55,582 |

PORT OF NEW ORLEANS—SEPTEMBER, 1915.

| Imports: | Pounds. | Value. |
|--------------|---------|----------|
| India rubber | 251,361 | \$83,680 |

Plantation Rubber from the Far East.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

| To— | Singapore. July 31. | Malacca. Aug. 19. | Penang. July 31. | Port Swet- tenham. Sept. 15. | Total. |
|------------------------|------------------------|----------------------|---------------------|------------------------------------|------------|
| Great Britain...pounds | 18,948,840 | 5,346,805 | 13,272,198 | 20,144,518 | 57,712,361 |
| Continent | 3,094,614 | ..... | 676,132 | 20,160 | 3,790,906 |
| Japan | 1,066,849 | ..... | ..... | ..... | 1,066,849 |
| Ceylon | 129,381 | ..... | 328,666 | 1,111,650 | 1,569,697 |
| United States | 16,560,397 | ..... | 755,000 | ..... | 17,315,397 |
| Australia | 242,459 | ..... | ..... | ..... | 242,459 |
| Total | 40,042,540 | 5,346,805 | 15,031,996 | 21,276,328 | 81,697,669 |
| Same period, 1914. | 24,175,230 | 3,234,581 | 11,521,466 | 20,637,311 | 59,568,588 |
| Same period, 1913. | 13,938,262 | ..... | 8,222,533 | 19,946,488 | 42,107,283 |
| Same period, 1912. | 7,018,784 | ..... | 4,798,834 | 14,057,852 | 25,875,470 |

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to September 20, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

| To— | 1914 | 1915. |
|-------------------------------|------------|------------|
| Great Britain | 12,604,015 | 17,187,085 |
| United States | 6,240,667 | 10,919,268 |
| Belgium | 2,969,369 | ..... |
| Germany | 1,037,415 | ..... |
| Australia | 482,674 | ..... |
| France | 282,072 | 379,872 |
| Japan | 215,100 | 236,251 |
| Russia | 105,212 | 332,200 |
| Straits Settlements | 42,535 | 119,933 |
| Italy | 1,772 | ..... |
| India | 1,050 | 1,000 |
| Canada and Newfoundland ..... | ..... | 384,940 |
| Total | 23,981,881 | 30,079,486 |

(Same period 1913, 17,188,348 pounds; same period, 1912, 8,594,090.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. (These amount to 2,782,475 pounds.) To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 are for Ceylon rubber only.

SINGAPORE.

Guthrie & Co., Ltd., report [September 15, 1915]:

The rubber auction held to-day opened quietly and bidding throughout was somewhat irregular.

Fine pale crepe again sold readily and for one lot \$132 was paid. Fine ribbed smoked sheet was \$1 down at \$128 and few lots reached this price, the average being about \$127. Unsmoked sheet was in very good demand, all parcels being eagerly snapped up at from \$112/119.

The lower grades marked an average decline of \$4, demand for these being slow.

Of 201 tons offered, 127 tons changed hands.

The following was the course of values:

| | In Singapore Picul.* | Sterling equivalent per pound in London. | Equivalent per pound in cents. |
|--|-------------------------|--|--------------------------------------|
| Sheet, fine ribbed smoked.... | \$125@128 | 2/ 5/4 @ 2/ 5/4 | 59.29@60.56 |
| Sheet, fair to good ribbed smoked | 123@124 | 2/ 4/4 @ 2/ 5 | 58.53@58.79 |
| Sheet, plain, smoked..... | 115@121 | 2/ 3/4 @ 2/ 4/4 | 54.98@57.52 |
| Sheet, unsmoked | 112@119 | 2/ 2/4 @ 2/ 4 | 53.72@56.76 |
| Crepe, fine pale..... | 126@132 | 2/ 5/4 @ 2/ 6/4 | 59.80@62.33 |
| Crepe, good pale..... | 125@ | 2/ 5/4 @ | 59.29@ |
| Crepe, fine brown..... | 121@124 | 2/ 4/4 @ 2/ 5 | 57.52@58.79 |
| Crepe, good brown..... | 109@120 | 2/ 1/4 @ 2/ 4/4 | 52.45@57.27 |
| Crepe, dark | 101@107 | 2/ 0/4 @ 2/ 1/4 | 49.16@51.70 |
| Crepe, bark | 92@106 | 1/10/4 @ 2/ 1/4 | 45.35@51.18 |
| Scrap, virgin | 75@ 99 | 1/ 6/4 @ 1/11/4 | 38.01@48.14 |
| Scrap, loose | 64@ 70 | 1/ 4/4 @ 1/ 5/4 | 33.45@35.98 |

*Picul = 133½ pounds.

Quoted in S. S. dollars = 2/4 [56 cents].

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram, received from Kuala Lumpur, announces that the export of plantation rubber from the Federated Malay States during the month of September amounted to 3,334 tons as compared with 3,796 tons in August and 2,879 tons in the corresponding month last year.

The following is a comparative table showing the export for three years:

| | 1913. | 1914. | 1915. |
|-----------------|------------|--------|--------|
| January | Tons 2,131 | 2,542 | 3,473 |
| February | " 1,757 | 2,364 | 3,411 |
| March | " 1,737 | 2,418 | 3,418 |
| April | " 1,626 | 2,151 | 2,777 |
| May | " 1,225 | 2,069 | 2,708 |
| June | " 2,005 | 2,306 | 3,403 |
| July | " 1,781 | 2,971 | 3,687 |
| August | " 2,363 | 1,850 | 3,796 |
| September | " 2,000 | 2,879 | 3,334 |
| Total | " 16,625 | 21,550 | 30,007 |

PLANTATION RUBBER EXPORTS FROM JAVA AND MADURA.

| | | July | | Seven Months Ending July 31. | |
|--------------------|------------------|---------|-----------|---------------------------------|-----------|
| EXPORTS TO— | | 1914. | 1915. | 1914. | 1915. |
| Holland..... | Ficus | 1,144 | 4,704 | 31,196 | 27,062 |
| | Hevea | 292,600 | 468,600 | 1,786,400 | 1,553,200 |
| | Hevea (to order) | 79,200 | ..... | 464,200 | 4,400 |
| | Manihot (ceara) | 10,944 | 5,685 | 125,279 | 16,733 |
| | Castilloa | 9,075 | 4,024 | 41,958 | 4,112 |
| | Total..... | 392,963 | 483,013 | 2,449,033 | 1,605,507 |
| Great Britain..... | Ficus | 977 | 18,302 | 39,180 | 31,007 |
| | Hevea | 336,600 | 578,600 | 2,118,600 | 2,822,600 |
| | Manihot (ceara) | 980 | 5,808 | 27,854 | 15,596 |
| | Castilloa | 1,375 | 12,159 | 20,896 | 68,350 |
| | Total..... | 339,932 | 614,869 | 2,206,530 | 2,937,553 |
| Belgium..... | Ficus ..... | ..... | ..... | 462 | ..... |
| | Hevea | 125,400 | ..... | 532,400 | ..... |
| | Total..... | 125,400 | ..... | 532,862 | ..... |
| France..... | Hevea | 2,200 | ..... | 6,600 | ..... |
| United States.... | Hevea | 2,200 | 928,400 | 90,200 | 4,087,600 |
| | Manihot (ceara) | ..... | ..... | ..... | 8,692 |
| | Total..... | 2,200 | 928,400 | 90,200 | 4,096,292 |
| Germany..... | Hevea | 17,600 | ..... | 79,200 | ..... |
| | Castilloa ..... | ..... | ..... | 2,735 | ..... |
| | Total..... | 17,600 | ..... | 81,935 | ..... |
| Singapore..... | Ficus ..... | ..... | 3,344 | 328 | 12,643 |
| | Hevea | 50,600 | 57,200 | 165,000 | 352,000 |
| | Manihot (ceara) | ..... | ..... | 260 | ..... |
| | Total..... | 50,600 | 60,544 | 165,588 | 364,643 |
| Japan..... | Hevea ..... | ..... | 17,600 | ..... | 211,200 |
| Other Countries.. | Ficus ..... | ..... | 120 | ..... | 539 |
| | Hevea ..... | ..... | ..... | ..... | 85,800 |
| | Total ..... | ..... | 120 | ..... | 86,339 |
| | Grand Total | 930,895 | 2,104,546 | 5,532,748 | 9,301,534 |

THE RUBBER SCRAP MARKET.

OCTOBER 30, 1915.

THE New York market developed considerable activity early in October, due to the spirited trading in boots and shoes. It was apparently a trader's market, which the mills refused to support with substantial orders. Prices asked for boots and shoes were 8½ cents delivered. All other grades were inactive and prices unchanged.

The interest in boots and shoes continued during the month despite the lack of large buying orders from the mills. The price level was evidently too high, and consumers preferred to wait for better prices. However, actual transactions were made at 8½ cents.

The rest of the list has not developed unusual interest. There are excessive stocks of auto. tires, and prices are therefore easier. Solid and bicycle tires, which have been slow for several months, are firmer. There appears to be a surplus of white tires, resulting in lower prices. Tubes are firmer, and a good buying demand is anticipated by holders of tube stocks. No change has been noted in the other grades of scrap, although hose is receiving fair attention and prices are holding their own.

NEW YORK QUOTATIONS FOR CARLOAD LOTS.

October 30, 1915.

| | Per Pound. |
|-----------------------------|-----------------|
| Boots and shoes..... | \$0.08½ @ 0.08¾ |
| Trimmed arctics | .06¾ @ .07½ |
| White auto tires No. 1..... | .06¾ @ .07 |
| No. 2..... | .05 @ .05½ |
| Auto tires, mixed..... | .05 @ .05½ |
| stripped, ungummed | .03¾ @ .03½ |
| Solid tires | .04¾ @ .04½ |
| Inner tubes, No. 1..... | .25 @ .26 |
| No. 2..... | .11 @ .11½ |
| red | .12½ @ |
| Bicycle tires | .03 @ .03½ |
| Irony tires | .01¼ @ .02 |
| Auto peelings, No. 1..... | .08½ @ .09 |
| No. 2..... | .06¾ @ .07 |
| White scrap, No. 1..... | .11 @ .12 |
| No. 2..... | .09¼ @ .09½ |
| Red scrap, No. 1..... | .10 @ .10½ |
| No. 2..... | .07¾ @ .07½ |
| Rubber car springs | .02¾ @ .02¾ |
| Horse shoe pads | .03½ @ .04 |
| Matting and packing | .00½ @ .00¾ |
| Garden hose | .00¾ @ .00¾ |
| Air brake hose..... | .05 @ .05½ |
| Cotton fire hose | .01¾ @ .02 |
| Large hose | .01 @ .01½ |

The chemicals are practically all firm in price. Glacial acetic acid has advanced to 21½@25 cents a pound in barrels, and glycerine is not obtainable. The naphtha solvents have advanced a cent a gallon, benzol is quoted at 80@90 cents, and toluol is firm at \$4.00 to \$4.50 a gallon. All the benzol produced in Great

Britain has been commandeered by the war office and none can be sold or exported. Litharge has been in demand at firm prices, while market quotations on white and red lead have not changed; though sales have been reported at higher figures based on better quality.

The rosin and turpentine markets have been very active and advances have probably reached the limit. Aniline oil is selling at 95 cents to \$1.50 per pound, and pine and rosin oil have advanced.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.

NEW YORK, OCTOBER 29, 1915.

| | | | |
|--|------|--------|----------|
| Acetone (drums) | lb. | \$0.28 | @ \$0.29 |
| Acid, acetic, 28 per cent. (bbls.) | lb. | 3.00 | @ 3.15 |
| glacial (carboys) | lb. | .21½ | @ .25 |
| Aluminum Flake (carloads) | ton | 18.00 | @ 20.00 |
| Ammonium carbonate | | None | |
| Antimony, crimson, sulphuret of (casks) | lb. | .80 | @ .85 |
| golden, sulphuret of (casks) | lb. | .60 | @ .70 |
| Asbestine | ton | 19.00 | @ 20.00 |
| Asbestos | lb. | .04 | @ .05 |
| Asphaltum "G" Brilliant | lb. | .03 | @ .03½ |
| Barium sulphate, precipitated | ton | 90.00 | @ 100.00 |
| Barytes, pure white | ton | 16.00 | @ 20.00 |
| off color | ton | 12.50 | @ 14.00 |
| Basofo | ton | 115.00 | @ |
| Benzol, pure | gal. | .80 | @ .90 |
| Beta-Naphthol | lb. | 2.00 | @ 2.50 |
| Black Hypo | lb. | None | |
| Blanc Fixe | lb. | .03 | @ .03½ |
| Bone ash | lb. | .06½ | @ |
| black | lb. | .06½ | @ .07 |
| Cadmium tri-sulphate | lb. | None | |
| yellow | lb. | None | |
| Canella gum | lb. | .27½ | @ .35 |
| Carbon, bisulphide (drums) | lb. | .06½ | @ .07½ |
| black (cases) | lb. | .07½ | @ |
| tetrachloride (drums) | lb. | .18 | @ |
| Caustic soda, 76 per cent. (bbls.) | cwt. | 5.00 | @ 5.50 |
| Chalk, precipitated, extra light | lb. | .04 | @ .04½ |
| China clay, domestic | ton | 8.00 | @ 9.00 |
| imported | ton | 16.00 | @ 24.00 |
| Chrome, green | lb. | .08 | @ .10 |
| yellow | lb. | .13 | @ .14½ |
| Cotton linters | lb. | .05 | @ .08 |
| Di-chlorethane (drums) | lb. | .12 | @ .12½ |
| Emarex | ton | 70.00 | @ |
| Gas black | lb. | .07½ | @ |
| Gilsonite | ton | 37.50 | @ 42.50 |
| Glycerine, C. P. (drums) | lb. | .50 | @ |
| Graphite, flake (250 to 400 pound bbl.) | lb. | .14 | @ |
| powdered (250 to 400 pound bbl.) | lb. | .14 | @ |
| Green oxide of chromium (casks) | lb. | .30 | @ .35 |
| Ground glass | lb. | .02½ | @ |
| Iron oxide, red, reduced grades | lb. | .02 | @ .05 |
| red, pure | lb. | .05 | @ .08½ |
| Hemingsways | lb. | .07½ | @ |
| Infusorial earth, powdered | ton | 50.00 | @ |
| bolted | ton | 60.00 | @ |
| Ivory, black | lb. | .08 | @ .12 |
| Indian red | lb. | .02½ | @ .05½ |
| Lampblack | lb. | .04 | @ .08 |
| Lead, red oxide of | lb. | .06½ | @ .06¾ |
| sublimed blue | lb. | .05¾ | @ .05¾ |
| white, basic carbonate | lb. | .05¾ | @ .05¾ |
| white, basic sulphate | lb. | .05¾ | @ .05¾ |
| Lime, flour | lb. | .01 | @ .01½ |
| hydrated | lb. | .01 | @ .02 |
| Litharge | lb. | .06 | @ |
| English | lb. | None | |
| Lithopone, domestic | lb. | .06½ | @ .07½ |
| imported | lb. | .08½ | @ |
| Magnesia, carbonate | lb. | .04½ | @ .05½ |
| calcined, heavy | lb. | .30 | @ .35 |
| light | lb. | .20 | @ .27 |
| Magnesite, calcined, powdered | ton | 30.00 | @ 35.00 |
| Mica, powdered | lb. | .03½ | @ .05 |
| Mineral rubber | lb. | .01¾ | @ .04½ |
| Naphtha, stove gasoline (steel bbls.) | gal. | .17 | @ |
| 66@68 degrees | gal. | .21 | @ |
| 68@70 degrees | gal. | .22 | @ |
| Oil, aniline | lb. | .95 | @ 1.50 |
| linseed (bbl.) | gal. | .35 | @ |
| palm | gal. | .07 | @ .07½ |
| pine (cases) | gal. | .60 | @ |
| rosin, heavy body | gal. | .28 | @ .40 |
| tar (cases) | lb. | .23 | @ |
| soluble aniline colors, yellow, orange, red, violet, blue, green | lb. | 2.50 | @ |
| Orange mineral, domestic | lb. | .10 | @ |
| Petroleum grease | lb. | .03½ | @ |
| Pine tar, retort | gal. | .14 | @ |
| Pitch, burgundy | lb. | .04 | @ .05 |
| pine | cwt. | 1.95 | @ |
| Plaster of paris | lb. | 1.50 | @ 1.70 |
| Prussian blue | lb. | 1.10 | @ 1.20 |
| Pumice stone, powdered (bbls.) | lb. | .02 | @ .03 |
| Resin, Pontianak, refined | lb. | .14 | @ |
| granulated | lb. | .10 | @ |
| fused | lb. | .10 | @ |
| Rosin (500 pound bbls.) | lb. | 4.50 | @ 8.00 |

| | | | |
|---|------|-------|---------|
| Rotten stone, powdered | lb. | .02½ | @ .04 |
| Rubber flux | lb. | .05 | @ .06 |
| Rubber substitute, black | lb. | .06 | @ .07½ |
| white | lb. | .07½ | @ .15 |
| Shellac, fine orange | lb. | .22 | @ .25 |
| Soapstone, powdered | ton | 10.00 | @ 12.00 |
| Starch, corn, powdered | lb. | .02½ | @ |
| Sulphur chloride (drums) | lb. | .06½ | @ .07½ |
| Sulphur, flowers | cwt. | 2.20 | @ 2.60 |
| Sulphuric acid | lb. | .01¼ | @ .02 |
| Talc, American | ton | 8.50 | @ 13.00 |
| French | ton | 18.00 | @ 25.00 |
| Toluol, pure | gal. | 4.00 | @ 4.50 |
| Tripolite earth, powdered | ton | 50.00 | @ |
| bolted | ton | 60.00 | @ |
| Turpentine, pure gum spirits | gal. | .56 | @ .59 |
| wood | gal. | .42 | @ .49 |
| Ultramarine, blue | lb. | .04 | @ .22 |
| Vermilion, brilliant | lb. | .75 | @ .80 |
| Chinese | lb. | .95 | @ 1.00 |
| English | lb. | 1.40 | @ 1.50 |
| Wax, bayberry | lb. | .22 | @ .24 |
| beeswax, white | lb. | .45 | @ .60 |
| ceresin, white | lb. | .14 | @ .16 |
| carnauba | lb. | .23 | @ .40 |
| ozokerite, refined white | lb. | .22 | @ .25 |
| montan | lb. | .22 | @ .24 |
| paraffin, refined, 118/120 m. p. (cases) | lb. | .03¾ | @ |
| 123/125 m. p. (cases) | lb. | .04 | @ |
| 128/130 m. p. (cases) | lb. | .04¾ | @ |
| 133/136 m. p. (cases) | lb. | .06 | @ .06½ |
| crude, white, 117/119 m. p. (bbls.) | lb. | .03½ | @ |
| yellow, 124/126 m. p. (bbls.) | lb. | .03½ | @ |
| Whiting, Alba, factory | ton | 6.50 | @ 7.50 |
| commercial | cwt. | .50 | @ .55 |
| gilders | cwt. | .55 | @ .65 |
| Paris white, American | cwt. | .70 | @ .75 |
| English cliffstone | cwt. | .90 | @ 1.25 |
| Yellow ochre | lb. | .01¾ | @ .02 |
| Zinc oxide, American process (factory) horse head | lb. | .08½ | @ |
| "special" | lb. | .07½ | @ |
| "XX red" | lb. | .30¾ | @ |
| French process, green seal | lb. | .30¾ | @ |
| red seal | lb. | .30¾ | @ |
| white seal | lb. | .31¾ | @ |
| Zinc sulphide | lb. | .07 | @ .07½ |

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF RUBBER AND MANUFACTURES OF.

| ARTICLES. | August, 1915. | | Eight Months Ending August, 1915. | |
|--|---------------|-------------|-----------------------------------|--------------|
| | Quantity. | Value. | Quantity. | Value. |
| India rubber, etc., and substitutes for, and manufactures of: | | | | |
| Unmanufactured— | | | | |
| Balata | 313,470 | \$118,793 | 1,506,783 | \$566,631 |
| Guayule gum | 476,654 | 140,936 | 4,450,371 | 1,236,976 |
| Gutta jelutong | 2,117,259 | 98,007 | 11,543,465 | 590,548 |
| Gutta percha | 134,698 | 15,278 | 1,168,303 | 146,077 |
| Total | 3,042,081 | \$373,014 | 18,668,922 | \$2,540,232 |
| India rubber from: | | | | |
| France | 55,097 | \$26,723 | 220,032 | \$100,742 |
| Germany | | | 6,987 | 843 |
| Portugal | 480,363 | 190,060 | 3,634,105 | 1,307,115 |
| United Kingdom | 5,254,070 | 3,110,794 | 64,382,481 | 34,342,258 |
| Central American States and British Honduras | 93,569 | 43,567 | 864,948 | 388,944 |
| Mexico | 70,657 | 1,112,973 | 435,240 | |
| Brazil | 3,039,813 | 919,927 | 33,591,402 | 14,517,211 |
| Other South America | 916,091 | 433,940 | 4,127,777 | 1,779,807 |
| East Indies | 7,012,833 | 3,687,539 | 27,771,386 | 14,371,399 |
| Other countries | 37,620 | 18,701 | 5,033,185 | 2,813,859 |
| Total | 17,060,113 | \$8,501,908 | 140,745,276 | \$70,057,418 |
| India rubber scrap or refuse fit only for re-manufacture | 1,648,585 | \$116,390 | 7,520,815 | \$514,213 |
| Total unmanufactured | | \$8,991,312 | | \$73,111,863 |
| Manufactures of— | | | | |
| Gutta percha | | \$1,246 | | \$3,543 |
| India rubber | | 32,181 | | 361,181 |
| Total manufactures of | | \$33,427 | | \$364,724 |
| Substitutes, elastic and similar | | \$908 | | \$13,076 |

EXPORTS OF AMERICAN RUBBER GOODS.

| ARTICLES. | | | | |
|----------------------------------|---------|----------|-----------|-----------|
| India rubber, manufactures of: | | | | |
| Scrap and old | 215,691 | \$17,868 | 1,878,483 | \$233,453 |
| Reclaimed | 488,519 | 63,056 | 4,120,737 | 556,818 |
| Beltting, hose and packing | | 184,330 | | 1,252,247 |
| Boots and shoes— | | | | |
| Boots | 6,248 | 14,953 | 119,820 | 277,427 |
| Shoes | 158,035 | 84,861 | 1,336,285 | 1,078,017 |

| Tires—For automobiles— | | | | EXPORTS OF FOREIGN MERCHANDISE. | | | |
|-------------------------------|-------------|--------------|--|---|---------|-----------|-----------------------|
| England | \$703,109 | \$3,180,992 | | India rubber, etc., and substitutes for, and manufactures of: | | | |
| Canada | 170,686 | 692,920 | | Unmanufactured: | | | |
| Mexico | 5,936 | 71,387 | | Balata pounds.. free | 35,022 | \$13,258 | 725,105 \$283,478 |
| Cuba | 22,028 | 187,655 | | Guayule gum | 18,500 | 7,770 | 47,391 16,701 |
| Australia | 91,124 | 311,755 | | Gutta jelutong | 162 | 18 | 162 18 |
| Philippine Islands | 22,465 | 195,322 | | Gutta percha | | | 49,178 10,297 |
| Other countries | 196,456 | 869,756 | | India rubber | 247,289 | 115,794 | 3,288,097 1,667,234 |
| Total automobile tires.. | \$1,211,804 | \$5,509,787 | | India rubber scrap | | | 3,483 373 |
| All other | 298,571 | 958,366 | | Total unmanufactured.. | 300,973 | \$136,840 | 4,113,416 \$1,978,101 |
| All other manufactures of.... | 483,430 | 3,089,473 | | Manufactures of india rubber | | \$391 | \$4,186 |
| Total | \$2,358,873 | \$12,955,588 | | Substitutes, elasticon and similar | | | 364 |

IMPORTS AND EXPORTS OF RUBBER AND RUBBER MANUFACTURES AT THE PORT OF NEW YORK.

| IMPORTS.—The quantity is given in packages. | | India Rubber. | | Rubber Waste. | | Rubber Manufactures. | | Chicle. | |
|---|--|---------------|-------------|---------------|----------|----------------------|----------|-----------|---------|
| Week ending— | | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| September 25, 1915..... | | 42,673 | \$3,766,153 | 400 | \$12,889 | 52 | \$11,989 | 41 | \$2,203 |
| October 2 | | 88,446 | 2,568,591 | 69 | 518 | 17 | 3,214 | 522 | 89,357 |
| October 9 | | 26,953 | 1,984,206 | 87 | 2,853 | 23 | 3,180 | 51 | 1,729 |
| October 16 | | 32,340 | 2,667,484 | 592 | 7,889 | 26 | 2,182 | 355 | 21,778 |
| October 23 | | 15,020 | 1,108,813 | 197 | 2,748 | 63 | 3,980 | 514 | 22,749 |

EXPORTS.—August 1 to August 31, 1915.

| MANUFACTURES TO— | Rubber Goods not specified. | Hose. | Packing. | Dress Shields. | Aero-planes. | Rubber Cement. | MANUFACTURES TO— | Rubber Goods not specified. | Hose. | Packing. | Dress Shields. | Aero-planes. | Rubber Cement. |
|-----------------------|-----------------------------|-------|----------|----------------|--------------|----------------|----------------------------------|-----------------------------|---------------|----------|-------------------|---------------|--------------------|
| Africa .....Value | \$75,238 | \$500 | \$1,725 | ... | ... | \$140 | Mexico | 6,363 | 1,320 | 457 | ... | ... | ... |
| Argentina | 21,200 | 290 | 1,373 | ... | ... | ... | New Zealand | 18,062 | ... | 157 | ... | ... | ... |
| Australia | 42,263 | 217 | 987 | ... | ... | ... | Norway, Sweden and Denmark | 11,728 | ... | ... | ... | ... | ... |
| Bolivia | 207 | ... | ... | ... | ... | ... | Peru | 12,226 | 1,049 | 1,740 | ... | ... | ... |
| Brazil | 34,813 | ... | 461 | ... | ... | ... | Portugal | 120 | ... | ... | ... | ... | ... |
| British Guiana | 882 | ... | ... | ... | ... | ... | Russia | 2,000 | ... | ... | ... | ... | ... |
| Canada | 2,668 | ... | ... | ... | ... | ... | Siam | 121 | ... | ... | ... | ... | ... |
| Central America | 12,040 | 1,636 | 1,287 | ... | ... | ... | Singapore | 743 | ... | ... | ... | ... | ... |
| Ceylon | 280 | ... | ... | ... | ... | ... | Spain | 5,963 | ... | 151 | ... | ... | ... |
| Chile | 12,444 | ... | 154 | ... | ... | ... | Venezuela | 4,454 | ... | 980 | ... | ... | ... |
| China | 1,329 | ... | 533 | ... | ... | ... | West Indies | 100,326 | 6,488 | 16,371 | ... | ... | 408 |
| Colombia | 3,676 | 1,464 | ... | ... | ... | 134 | Total | \$1,357,597 | \$15,569 | \$33,474 | \$1,898 | \$591,191 | \$682 |
| Curacao | 233 | ... | ... | ... | ... | ... | UNMANUFACTURED TO— | Crude Rubber. | Gutta Percha. | Balata. | Reclaimed Rubber. | Rubber Scrap. | Rubber Substitute. |
| Dutch Guiana | 241 | ... | ... | ... | ... | ... | France .....Value | ... | ... | ... | \$500 | ... | ... |
| Ecuador | 468 | 2,605 | ... | ... | ... | ... | Great Britain | \$13,607 | \$1,710 | ... | 1,500 | \$9,464 | ... |
| France | 20,289 | ... | ... | ... | ... | ... | Italy | ... | ... | \$2,151 | ... | 600 | \$200 |
| Great Britain | 736,601 | ... | 4,116 | \$1,898 | \$588,361 | ... | Japan | ... | ... | ... | 1,210 | ... | ... |
| Greece | 150 | ... | ... | ... | ... | ... | Total | \$13,607 | \$1,710 | \$2,151 | \$2,000 | \$11,274 | \$200 |
| Holland | 1,719 | ... | ... | ... | ... | ... | | | | | | | |
| India | 3,100 | ... | ... | ... | ... | ... | | | | | | | |
| Italy | 208,656 | ... | ... | ... | 2,830 | ... | | | | | | | |
| Japan | 6,684 | ... | 2,839 | ... | ... | ... | | | | | | | |
| Java | 10,310 | ... | 179 | ... | ... | ... | | | | | | | |

EXPORTS.—September 1 to 15, 1915.

| MANUFACTURES TO— | Belting, Hose and Packing. | Footwear. | | Tires. | | Insulated Wire and Cable. | Other mfs. of India Rubber. | Fountain Pens. | Chewing Gum. | Reclaimed Rubber. | Scrap. |
|----------------------------------|----------------------------|-----------|----------|-----------|--------------------------|---------------------------|-----------------------------|----------------|--------------|-------------------|---------|
| | | Boots. | Shoes. | Auto. | Other tires and mfs. of. | | | | | | |
| Africa | \$2,242 | \$590 | \$198 | \$6,123 | \$138 | ... | ... | ... | \$297 | ... | ... |
| Argentina | 3,517 | ... | ... | 15,204 | 2,104 | \$3,663 | \$2,522 | \$3,206 | 4,074 | \$232 | ... |
| Australia | 716 | ... | ... | 1,090 | 4,021 | 702 | ... | ... | 981 | ... | ... |
| Brazil | 737 | 85 | 632 | 15,434 | ... | 1,474 | 4,860 | 471 | ... | ... | ... |
| Bolivia | 95 | ... | ... | 417 | ... | ... | ... | ... | ... | ... | ... |
| British Guiana | ... | ... | ... | 199 | 145 | 29 | ... | ... | ... | ... | ... |
| Canada | 129 | ... | 1,845 | 582 | 688 | 246 | ... | ... | 691 | ... | ... |
| Central America and Panama | 5,463 | ... | ... | 3,861 | 2,922 | 68,860 | 3,519 | ... | 735 | ... | \$42 |
| China | 1,219 | 672 | ... | ... | 3,898 | 4,818 | ... | ... | ... | ... | ... |
| Colombia | 183 | ... | 146 | 211 | ... | ... | 651 | ... | ... | ... | ... |
| Ecuador | 567 | ... | ... | 1,981 | 788 | 954 | 50 | ... | 755 | ... | ... |
| France | 479 | ... | ... | 85 | 15 | ... | 26 | ... | ... | ... | ... |
| French Guiana | 111 | ... | ... | 69 | 30,104 | 12,179 | 3,899 | ... | 625 | 6,200 | ... |
| Great Britain | 9,881 | 72 | 6,646 | 231,645 | 92,209 | 75,243 | 16,805 | 316 | ... | 5,060 | 6,013 |
| Greece | ... | ... | ... | ... | 700 | ... | ... | 36 | 800 | ... | ... |
| Holland | ... | ... | ... | 1,295 | 694 | 21,348 | ... | ... | ... | ... | ... |
| India | 208 | ... | ... | 598 | 492 | ... | 3,319 | ... | ... | ... | ... |
| Italy | 697 | ... | ... | 125 | 251 | ... | 479 | 500 | ... | ... | ... |
| Mexico | 309 | ... | ... | 1,119 | ... | 700 | 365 | ... | ... | ... | ... |
| New Zealand | 90 | 132 | ... | 1,088 | 4,839 | ... | ... | ... | ... | ... | ... |
| Norway, Sweden and Denmark | ... | ... | ... | ... | 12,850 | 2,250 | ... | ... | ... | ... | ... |
| Oceania | ... | ... | ... | 86 | ... | ... | ... | ... | ... | ... | ... |
| Peru | 1,050 | ... | ... | 343 | 463 | 10,100 | 200 | 37 | ... | ... | ... |
| Portugal | ... | ... | ... | 929 | ... | ... | ... | ... | ... | ... | ... |
| Roumania | ... | ... | ... | ... | ... | 2,100 | ... | ... | ... | ... | ... |
| Russia | ... | ... | ... | ... | ... | 121 | 34 | ... | ... | ... | ... |
| Spain | ... | ... | ... | ... | 2,569 | ... | ... | ... | ... | ... | ... |
| Uruguay | 197 | ... | ... | 3,245 | 3,602 | ... | ... | ... | ... | ... | ... |
| Venezuela | 347 | ... | ... | 1,731 | 591 | 2,799 | 239 | ... | ... | ... | ... |
| West Indies | 9,198 | 512 | 223 | 20,927 | 27,783 | 23,687 | 1,738 | 11 | 1,333 | ... | ... |
| Totals | \$37,435 | \$1,391 | \$10,362 | \$308,387 | \$191,866 | \$271,273 | \$38,706 | \$4,177 | \$10,293 | \$11,492 | \$6,055 |

In addition to the above the following were exported during the same period: To Great Britain, aeroplanes valued at \$45,350 and balata valued at \$14,135; to Chile, gutta percha valued at \$19, and to Venezuela, india rubber valued at \$53.

RUBBER STATISTICS FOR CANADA.

IMPORTS OF RUBBER AND MANUFACTURES OF.

| UNMANUFACTURED, FREE— | July, 1915. | | Four Months Ending July, 1915. | |
|--|-----------------------|----------------------------|--------------------------------|----------------------------|
| | Quantity. | Value. | Quantity. | Value. |
| Rubber and gutta percha, crude caoutchouc or india rubber: | | | | |
| From Great Britain.....pounds | 574,515 | \$331,749 | 1,182,001 | \$663,019 |
| United States..... | 243,619 | 126,679 | 1,179,491 | 569,038 |
| B. Straits Settlements..... | | | 11,200 | 5,346 |
| Other countries..... | | | 169,898 | 79,492 |
| Total..... | 818,134 | \$458,428 | 2,542,590 | \$1,316,895 |
| Rubber, re-covered: | | | | |
| From Great Britain..... | | | 4,392 | \$2,482 |
| United States..... | 368,086 | \$46,484 | 1,458,405 | 187,579 |
| Total..... | 368,086 | \$46,484 | 1,462,797 | \$190,061 |
| Rubber substitute: | | | | |
| From Great Britain..... | 5,882 | \$665 | 10,820 | \$1,166 |
| United States..... | 35,158 | 2,045 | 154,070 | 11,649 |
| Total..... | 41,040 | \$2,710 | 164,890 | \$12,815 |
| Rubber, powdered, and rubber or gutta percha waste or junk: | | | | |
| From United States..... | 110,669 | \$5,015 | 293,030 | \$26,303 |
| Other countries..... | 2,219 | 98 | 2,519 | 105 |
| Total..... | 112,888 | \$5,113 | 295,549 | \$26,408 |
| Balata, crude: | | | | |
| From United States..... | 1,103 | \$689 | 1,333 | \$820 |
| Chicle or sapota gum, crude: | | | | |
| From United States..... | 1,485 | \$796 | 101,985 | \$41,401 |
| B. Honduras..... | 120,440 | 37,064 | 509,300 | 184,423 |
| Mexico..... | | | 126,294 | 46,238 |
| Total..... | 121,925 | \$37,860 | 737,579 | \$272,062 |
| Hard Rubber, in sheets: | | | | |
| From United States..... | 9,394 | \$882 | 34,667 | \$3,383 |
| Rubber thread, not covered: | | | | |
| From United States..... | 2,694 | \$3,742 | 8,372 | \$11,605 |
| MANUFACTURED, DUTABLE— | July, 1915. | | Four Months Ending July, 1915. | |
| | General Tariff Value. | Preferential Tariff Value. | General Tariff Value. | Preferential Tariff Value. |
| Clothing, and clothing made waterproof with india rubber: | | | | |
| From Great Britain..... | \$64 | \$55,354 | \$1,811 | \$178,811 |
| United States..... | 15,346 | | 48,285 | |
| Other countries..... | | | 21 | |
| Total..... | \$15,410 | \$55,354 | \$50,117 | \$178,811 |
| Hose, including cotton or linen, lined with rubber: | | | | |
| From Great Britain..... | | \$37 | | \$369 |
| United States..... | \$4,712 | | \$28,775 | |
| Mats and Matting: | | | | |
| From Great Britain..... | | | | \$84 |
| United States..... | \$51 | | \$446 | |
| Packing: | | | | |
| From Great Britain..... | | | \$80 | \$493 |
| United States..... | \$4,091 | | \$17,523 | |
| Total..... | \$4,091 | | \$17,603 | \$493 |
| Tires of rubber for all vehicles: | | | | |
| From Great Britain..... | | \$2,192 | \$6,587 | \$12,181 |
| United States..... | 101,294 | | 392,108 | |
| France..... | 5,103 | | 11,850 | |
| Other countries..... | | | 779 | |
| Total..... | \$106,397 | \$2,192 | \$411,324 | \$12,181 |
| *Rubber cement, and all mnf. of india rubber and gutta percha, N. O. P.: | | | | |
| From Great Britain..... | \$121 | \$22,314 | \$1,090 | \$74,789 |
| United States..... | 41,827 | | 192,250 | |
| Other countries..... | 12 | | 327 | |
| Total..... | \$41,960 | \$22,314 | \$193,667 | \$74,789 |
| Hard Rubber, unfinished, in tubes, for mnf. of fountain pens: | | | | |
| From United States..... | \$836 | | \$1,941 | |
| Webbing, elastic, over one inch wide: | | | | |
| From Great Britain..... | | \$1,670 | | \$4,121 |
| United States..... | \$10,575 | | \$41,356 | |
| Other countries..... | | | 2 | |
| Total..... | \$10,575 | \$1,670 | \$41,358 | \$4,121 |
| Boots and Shoes: | | | | |
| From Great Britain..... | | | | \$3,667 |
| United States..... | \$7,607 | | \$18,997 | |

Belting:

| | | | |
|-------------------------|---------|--|----------|
| From Great Britain..... | | | \$1,041 |
| United States..... | \$6,075 | | \$15,872 |

*The value of rubber cement and all manufactures of india rubber and gutta percha under treaty rates, for July was \$85, and for the four months ending July was \$591.

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

| INDIA RUBBER GOODS—DUTABLE. | July, 1915. | | Four Months Ending July, 1915. | |
|-----------------------------|----------------------------|-------------------------------------|--------------------------------|-------------------------------------|
| | Prod-uce of Canada. Value. | Re-exports of foreign goods. Value. | Prod-uce of Canada. Value. | Re-exports of foreign goods. Value. |
| Belting: | | | | |
| To United States..... | | | | \$35 |
| Newfoundland..... | | | | \$74 |
| Hose: | | | | |
| To Great Britain..... | | | \$3,996 | |
| United States..... | \$45 | | 3,049 | \$47 |
| Newfoundland..... | 421 | | 1,917 | |
| Other countries..... | 546 | | 772 | |
| Total..... | \$1,012 | | \$9,734 | \$47 |
| Boots and Shoes: | | | | |
| To Great Britain..... | \$283 | | \$1,528 | |
| United States..... | 1,024 | \$55 | 3,303 | \$318 |
| Newfoundland..... | 277 | | 557 | |
| Australia..... | 2,155 | | 3,553 | |
| Other countries..... | 1,548 | | 7,541 | |
| Total..... | \$5,287 | \$55 | \$16,482 | \$318 |
| Mats and Matting: | | | | |
| To other countries..... | | | | \$418 |
| Clothing: | | | | |
| To Great Britain..... | | | \$27 | |
| United States..... | \$29 | \$30 | 29 | \$30 |
| Newfoundland..... | | | 140 | |
| Other countries..... | | | 11 | |
| Total..... | \$29 | \$30 | \$207 | \$30 |
| *Rubber Waste: | | | | |
| To United States..... | \$69,825 | \$1,624 | \$188,853 | \$1,624 |
| All Other, N. O. P.: | | | | |
| To Great Britain..... | \$40,564 | \$536 | \$176,266 | \$536 |
| United States..... | 8,188 | 561 | 50,575 | 254,423 |
| Newfoundland..... | 295 | | 2,924 | |
| Australia..... | | | 1,952 | |
| Other countries..... | 4,126 | 10 | 17,997 | 10 |
| Total..... | \$53,173 | \$1,107 | \$249,714 | \$254,969 |
| †Gum Chicle: | | | | |
| To Great Britain..... | | | \$5,000 | |
| United States..... | \$53,504 | \$15,000 | 211,064 | \$89,877 |
| Other countries..... | 3,152 | | 9,401 | 1,107 |
| Total..... | \$56,656 | \$15,000 | \$225,465 | \$90,984 |

*The total amount of rubber waste exported during July was 1,011,900 pounds, and for the four months ending July was 19,047,700 pounds.

†The total amount of gum chicle exported during July was 71,656 pounds, and for the four months ending July was 613,235 pounds.

UNITED KINGDOM RUBBER STATISTICS FOR MONTH ENDING SEPTEMBER 30, 1915.

| Unmanufactured— | September, 1915. | | Nine Months Ending September, 1915. | |
|---|------------------|-------------|-------------------------------------|--------------|
| | Quantity. | Value. | Quantity. | Value. |
| *Crude Rubber: | | | | |
| From— | | | | |
| Dutch East Indies.....pounds | 456,400 | \$254,319 | 4,539,300 | \$2,411,833 |
| French West Africa..... | 101,300 | 41,417 | 1,028,000 | 447,839 |
| Gold Coast..... | 45,200 | 14,390 | 470,800 | 143,263 |
| Other countries in Africa..... | 436,300 | 226,291 | 4,347,800 | 1,776,772 |
| Peru..... | 2,000 | 1,098 | 1,408,900 | 713,545 |
| Brazil..... | 902,300 | 476,338 | 21,267,000 | 11,613,470 |
| British India..... | 363,800 | 196,743 | 2,284,800 | 1,192,751 |
| Straits Settlements and dependencies, including Labuan..... | 4,627,400 | 2,546,251 | 51,130,800 | 26,936,035 |
| Federated Malay States..... | 2,390,500 | 1,354,166 | 20,928,300 | 11,503,149 |
| Ceylon and dependencies..... | 1,891,800 | 1,046,747 | 22,455,600 | 11,910,256 |
| Other countries..... | 229,000 | 115,401 | 3,254,000 | 1,565,216 |
| *Total..... | | \$6,273,161 | | \$70,214,129 |
| *Waste and reclaimed rubber. | 297,900 | \$26,978 | 2,906,200 | \$337,585 |
| Gutta percha..... | 471,400 | 247,078 | 5,707,800 | 2,404,310 |
| Manufactured— | | | | |
| Apparel, waterproofed..... | | \$6,955 | | \$20,704 |
| Boots and shoes—dozen pairs..... | 15,865 | 119,561 | 90,216 | 634,084 |
| Insulated wire..... | | 50,068 | | 363,611 |
| Submarine cables..... | | | | 637 |
| Motor tires and tubes..... | | 1,399,398 | | \$478,061 |
| Motorcycle tires and tubes..... | | 31,410 | | 435,850 |
| Cycle tires and tubes..... | | 3,383 | | 191,165 |
| Tires not specified..... | | 4,019 | | 79,514 |

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UNITED KINGDOM STATISTICS.

(Continued from page 103)

EXPORTS, UNITED KINGDOM.

| | | | |
|----------------------------------|-----------|-------------|--------------------------|
| Manufactured— | | | |
| Apparel, waterproofed: | | | |
| To France..... | \$16,884 | | \$123,376 |
| British South Africa..... | 21,846 | | 164,312 |
| British East Indies..... | 2,168 | | 115,746 |
| Australia..... | 3,266 | | 184,431 |
| New Zealand..... | 5,861 | | 114,346 |
| Canada..... | 17,253 | | 399,390 |
| Other countries..... | 98,221 | | 925,470 |
| Total..... | \$165,499 | | \$2,027,071 |
| Boots and shoes—dozen pairs..... | 7,910 | \$37,456 | \$6,726 \$457,161 |
| Insulated wire..... | | 210,078 | 1,133,532 |
| Submarine cables..... | | 15,824 | 1,354,337 |
| Motor tires and tubes..... | | 239,700 | 2,447,083 |
| Motorcycle tires and tubes..... | | 23,547 | 284,432 |
| Cycle tires and tubes..... | | 149,630 | 1,485,435 |
| Tires not specified..... | | 52,580 | 398,224 |
| Manufactures not specified..... | | 432,710 | 3,643,338 |
| EXPORTS, FOREIGN AND COLONIAL.* | | | |
| Unmanufactured— | | | |
| *Crude Rubber: | | | |
| To Russia.....pounds | 1,568,400 | \$812,315 | 17,949,800 \$14,627,529 |
| France..... | 1,386,600 | 789,143 | 11,495,900 6,455,280 |
| United States..... | 5,409,700 | 3,021,211 | 67,923,500 36,367,822 |
| Other countries..... | 1,316,000 | 730,470 | 13,934,100 7,654,422 |
| *Total..... | 9,680,700 | \$5,353,139 | 111,303,300 \$65,105,053 |
| Gutta percha.....pounds | 23,200 | \$14,206 | 691,300 \$305,927 |
| *Waste and reclaimed..... | 85,900 | 11,620 | 578,700 93,744 |
| Manufactured— | | | |
| Apparel, waterproofed..... | | \$934 | \$2,928 |
| Boots and shoes—dozen pairs..... | 2,078 | 13,103 | 6,857 54,204 |
| Insulated wire..... | | 20,015 | 27,974 |
| Motor tires and tubes..... | | 216,839 | 2,124,110 |
| Motorcycle tires and tubes..... | | 7,008 | 56,984 |
| Cycle tires and tubes..... | | 5,978 | 104,509 |
| Tires not specified..... | | | 21,671 |

*Included in "Rubber" prior to 1915. After 1914 "Rubber" is separated into "Raw" and "Waste and Reclaimed."

